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Lyman Project

STATELINE

Water Resource Development

IMPACT SURVEY REPORT



WASATCH NATIONAL FOREST

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE, Region 4

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UNITED STATES DEPARTMENT OF AGRICULTURE

WATER RESOURCE DEVELOPMENT

IMPACT SURVEY REPORT

Bureau of Reclamation's

Stateline Dam Project (Proposed)

Utah

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Salt Lake City, Utah

U.S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE

Water Resource Development
Impact Survey Report

An analysis of the interrelationship of the Bureau of Reclamation's proposed Stateline Dam and Reservoir and the resources and management of the Wasatch National Forest, Intermountain Region, Utah.

Project: LYMAN PROJECT - Stateline Dam and Reservoir

Applicant: U. S. Bureau of Reclamation

Forest Service Intermountain Region
Unit: Wasatch National Forest
Mountain View Ranger District

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12/16/74
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I. INTRODUCTION

The United States Department of Interior, Bureau of Reclamation, published a Definite Plan Report for the Lyman Project in the Green River Basin in southwestern Wyoming in November 1962. The authority to make this report was provided by the Federal reclamation laws (Act of June 17, 1902, 32 Stat. 388, and acts amendatory thereof or supplementary thereto).

THE LYMAN PROJECT WAS AUTHORIZED BY CONGRESS AS A PARTICIPATING PROJECT OF THE COLORADO RIVER STORAGE PROJECT BY THE ACT OF APRIL 11, 1956 (70 STAT. 105). The same act provided authorization to four units of the Colorado River Storage Project and 10 other participating projects, all of which are linked financially through the Upper Colorado River Basin Fund.

The Lyman Project, as presently planned, would consist of two dams and reservoirs. Meeks Cabin Dam and Reservoir was completed in 1971 and is located on the Blacks Fork drainage about 2 miles north of the Utah State line. The withdrawn lands at Meeks Cabin have been transferred for Forest Service administration. The proposed Stateline Dam and Reservoir would be constructed entirely on National Forest lands along the Smiths Fork drainage in Utah.

In 1962, the Forest Service prepared an Impact Survey Report on the entire Lyman Project. This report is a recent update of that report and provides an analysis of the Impact of the proposed Stateline Dam and Reservoir as an alternative to China Meadows of the resources, uses, facilities, services, and management of the Wasatch National Forest. This report is made within the authority and guidelines established by Public Law 86-517 (The Multiple Use and Sustained Yield Act), Public Law 89-80 (principles and Standards for Planning Water and Related Land Resources), the Intermountain Region Multiple Use Management Guide, and the Mountain View Ranger District Multiple Use Plan.

The first part of the paper is devoted to a general discussion of the problem of the existence of solutions of the system of equations (1) for arbitrary values of the parameters α and β . It is shown that the system has solutions for all values of the parameters α and β if the function $f(x)$ is continuous and has a bounded derivative.

In the second part of the paper the problem of the existence of solutions of the system of equations (1) for arbitrary values of the parameters α and β is solved. It is shown that the system has solutions for all values of the parameters α and β if the function $f(x)$ is continuous and has a bounded derivative.

In the third part of the paper the problem of the existence of solutions of the system of equations (1) for arbitrary values of the parameters α and β is solved. It is shown that the system has solutions for all values of the parameters α and β if the function $f(x)$ is continuous and has a bounded derivative.

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Drainage Basin - East Fork Smiths Fork. Stateline Dam and Reservoir site in foreground and Uinta Mountains in background.

II. GENERAL DATA ON PROJECT

- A. Name of Proposed Project. Stateline Dam and Reservoir of the Lyman Project.

A Bureau of Reclamation project feasibility report in 1950 was the basis for the Lyman Project authorization. Subsequent studies have pointed up the desirability of some changes in the plan and some of these are reflected in the Definite Plan Report which was published in November 1962 by the Bureau of Reclamation.

The Definite Plan Report includes reports from the following cooperating agencies:

1. Bureau of Sport Fisheries and Wildlife
2. National Park Service
3. Forest Service
4. Bureau of Mines
5. Public Health Service
6. Corps of Engineers

- B. Project Proponent. The Lyman Project was proposed by the Bureau of Reclamation with the Bridger Valley Conservancy District as the legally formed sponsor. The project was authorized for construction as a participating project of the Colorado River Storage Project by the Act of April 11, 1956 (70 Stat. 105).

A plan for the Lyman Project as a single-purpose irrigation development was outlined in a project feasibility report of 1950. That report was issued as a supplement to the 1950 report on the Colorado River Storage Project and participating projects and was the basis for the Lyman Project authorization. The definite plan studies pointed up the desirability for some changes in the plan, including primarily a change in the place of project storage and the addition of fish and wildlife conservation and recreation as project purposes.

The Regional Director's office, Region 4, in Salt Lake City is responsible for overall project construction and administration, with the project Construction Engineer's office in Mountain View in charge of actual construction activities. The Definite Plan Report was published in November 1962 and

construction plans envisioned completion of the project by the end of 1969. Work was started in 1966, and construction of the Meeks Cabin Dam and Reservoir was completed in 1971. China Meadows Dam and Reservoir was proposed and an Environmental Statement prepared in 1972.

The Council of Environmental Quality recommended on January 18, 1973, the Bureau of Reclamation's Environmental Statement on China Meadows Dam and Reservoir, Lyman Project, Wyoming, dated January 6, 1972, should not receive Secretary of the Interior Rogers C. B. Morton's "approval until such time as the environmental issues are fully addressed and the requirements of NEPA have been met." The Bureau of Reclamation has attempted to analyze alternatives through formation of an Environmental Evaluation Team using the "Guidelines for Implementing Principles and Standards for Multi-objective Planning of Water Resources. The result of this study indicates that the Stateline site is the "least environmental damaging of the development alternatives."

- C. Location. The site for the proposed Stateline Dam is situated in Sections 17, 18, 19, 20 & 30, T. 3 N., R. 14 E., Summit County, Utah, within Congressional District No. 1. It is located on the Mountain View Ranger District, Wasatch National Forest, Region 4 -- Intermountain Region. The dam and reservoir are on-stream developments on the East Fork of Smiths Fork, tributary of the Blacks Fork, which is tributary to the Green River drainage.

All of the land surrounding the project is National Forest land. There are about 29,000 acres of watershed above the reservoir with about 11,000 of these acres included within the High Uintas Primitive Area. Discharges for the East Fork of Smiths Fork are reflected on Page 8, which is a 26-year record of runoff from 1939 to 1965. Total annual average discharge, as measured at the Robertson Gaging Station (located 4 1/2 miles downstream from the proposed damsite), is 45.9 c.f.s. or 33,230 acre-feet per year. There is unknown inflow from side drainages through this 4 1/2-mile section of stream.

- D. Description of Project. Stateline Reservoir would be formed by a rolled earth and rockfill dam on the East Fork of Smiths Fork near the Utah-Wyoming stateline. The dam would have a crest length of 2,800 feet with a maximum height of 125 feet above streambed. The crest of the dam would provide sufficient width to accommodate standard access road across the drainage.

When full, the reservoir would cover 285^{1/} acres and have a total capacity of 13,400 acre-feet of storage, allocated as follows:

1. 2,000 acre-feet of inactive storage for fish conservation.
2. 10,000 acre-feet for irrigation. (This may include 1,100 acre-feet allocated to Municipal and Industrial water)
3. 1,000 acre-feet to provide a minimum flow of 10 c.f.s. below the dam (at point of confluence of spillway release plus overflow release) to supplement natural stream flows for maintenance of the stream fishery through the non-irrigation season.
4. 400 acre-feet transfer storage for stabilization of Marsh Lake to be used as irrigation water.

Stateline Reservoir data are shown as follows:

<u>Item</u>	<u>Elevation (feet m.s.l.)</u>	<u>Capacity (acre-feet)</u>	<u>Area (acres)</u>
Dam Crest	9174	13,400	285
Top active storage	9100	1,880	
Top inactive storage	9065		
Streambed	9048		

Reservoir Operation. Initial studies made by the Bureau of Reclamation in 1962 showed the 10,000 acre-feet of irrigation storage on the East Fork Smiths Fork would have been available in 22 years of the 31-year study period (1930-60), and would have been entirely used in all but 1 year of the study period. The reservoir usually would reach its highest level in June and be emptied of irrigation storage as early as July in extremely dry years. As a rule, it would be drawn down most rapidly in July, but in about 1 year out of 6, the greatest drawdown would be deferred until August.

Downstream non-irrigation flows to support the aquatic ecosystem will be less on the average than those historically measured.

- E. Proponent-Forest Service Discussions. The Forest Service and Bureau of Reclamation have maintained good lines of communication since 1962 on the Lyman Project. The initial Forest Service impact report was published on the Definite

^{1/} Bureau of Reclamation letter of September 16, 1974.

Plan Report of November 1962. Since this time, numerous meetings have been held to discuss various project impacts.

A Memorandum of Agreement establishing liaison and cooperation between both agencies was reached in October 1971. A supplemental agreement is proposed for the Stateline Dam and Reservoir.

The Forest Service has supported the water users and the Bureau in planning the project, but has repeatedly pointed out the need for a thorough analysis for all alternatives.

In our comments to the Bureau of Reclamation, August 5, 1971, Environmental Review, and March 1, 1972, Draft Environmental Statement on the China Meadows proposal, we recommended that all the alternatives should be evaluated since some project features under consideration were inconsistent to the management of National Forest land.

Eleven alternatives to the China Meadows proposal were evaluated during the summer of 1973. Further studies were completed in 1974. These investigations have resulted in the Bureau of Reclamation proposing the Stateline site for construction.

Even though the Stateline Alternative is thought by the Bureau of Reclamation to be the least "environmentally damaging," there are still significant effects to the environment that must be resolved.

Significant areas of environmental impact and concern for public safety in the Stateline proposal which remain to be solved are:

1. Extreme rate of reservoir drawdown during the recreation season degrading esthetic quality from extensive mud flats.
2. Unknown effects of return irrigation flows upon the salinity concentrations downstream.
3. Loss of wildlife habitat.
4. Loss of fisheries habitat.
5. Adequate recreation and sewage disposal facilities to accommodate increased use created by the facility.
6. Public safety during periods of high downstream releases.

It is the intent of the Forest Service to make this project as environmentally acceptable as possible. Hopefully, the plans and design for the Stateline project have not solidified to the point that change of design criteria for environmental concerns cannot be compromised or another alternative selected.

Station No. 9-2300, East Fork of Smith Fork near Richards, W. Va.

Drainage Area --- 58.2 sq. mi.

Records Available --- July 1939 to present

Average Discharge --- 26 years, 75.5 cfs (22,275 acre-feet per year)

Extremes --- Maximum discharge, 1746.5 cfs on June 15, 1957
Minimum discharge, no flow for part of each day, April 17-22, 24, 25, 1950

Monthly and Yearly Mean Discharges in cubic feet per second													
Water Year	7.4	July	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March	April	May	June
1939-40	16.8	6.2	9.0	3.7	2.2	5.7	12.7	14.0	8.6	24.2	10.9	15.3	27.1
1940-41	18.1	12.4	8.9	7.0	2.1	9.4	25.8	17.7	21.4	10.3	37.5	16.2	50.5
1941-42	18.7	11.2	3.8	7.4	2.1	8.2	29.8	13.0	19.4	6.1	27.6	12.2	44.9
1942-43	14.2	11.2	9.1	7.7	7.3	3.0	13.1	10.7	12.1	27.1	53.0	16.7	42.0
1943-44	11.6	8.1	6.7	5.7	6.2	7.7	15.9	17.4	22.3	74.4	24.2	14.2	43.3
1944-45	16.5	10.6	7.5	6.5	7.3	7.4	18.4	118.1	233.3	121.2	46.5	31.4	57.2

East Fork of Smith Fork Monthly Mean Discharge, 1939-45

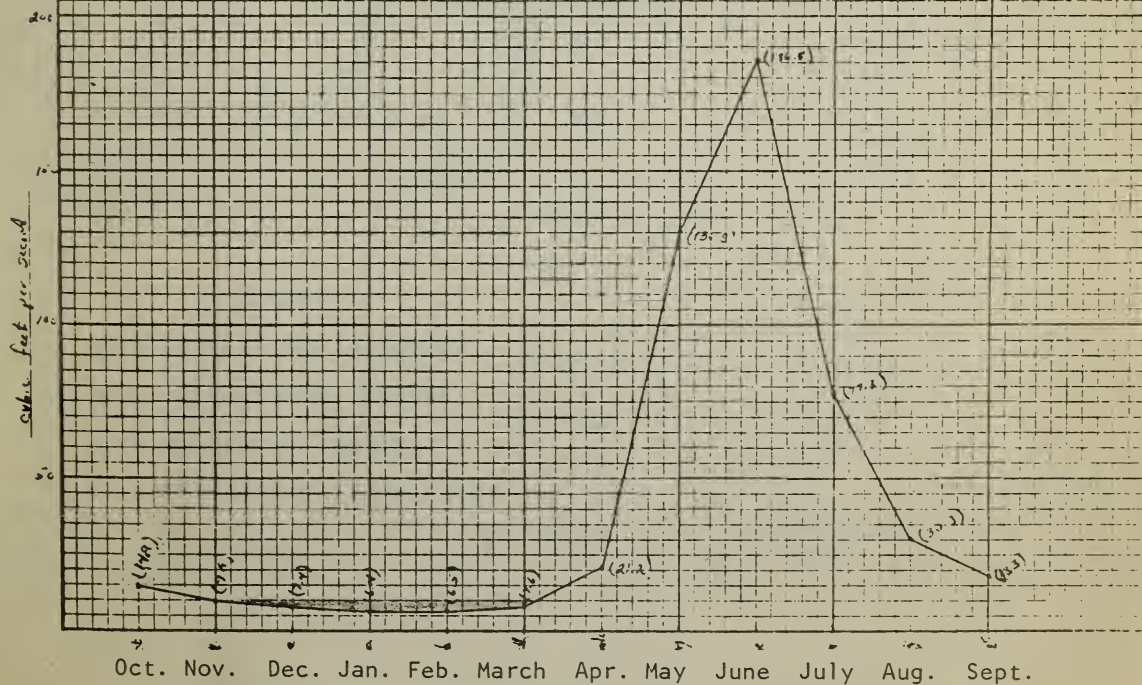
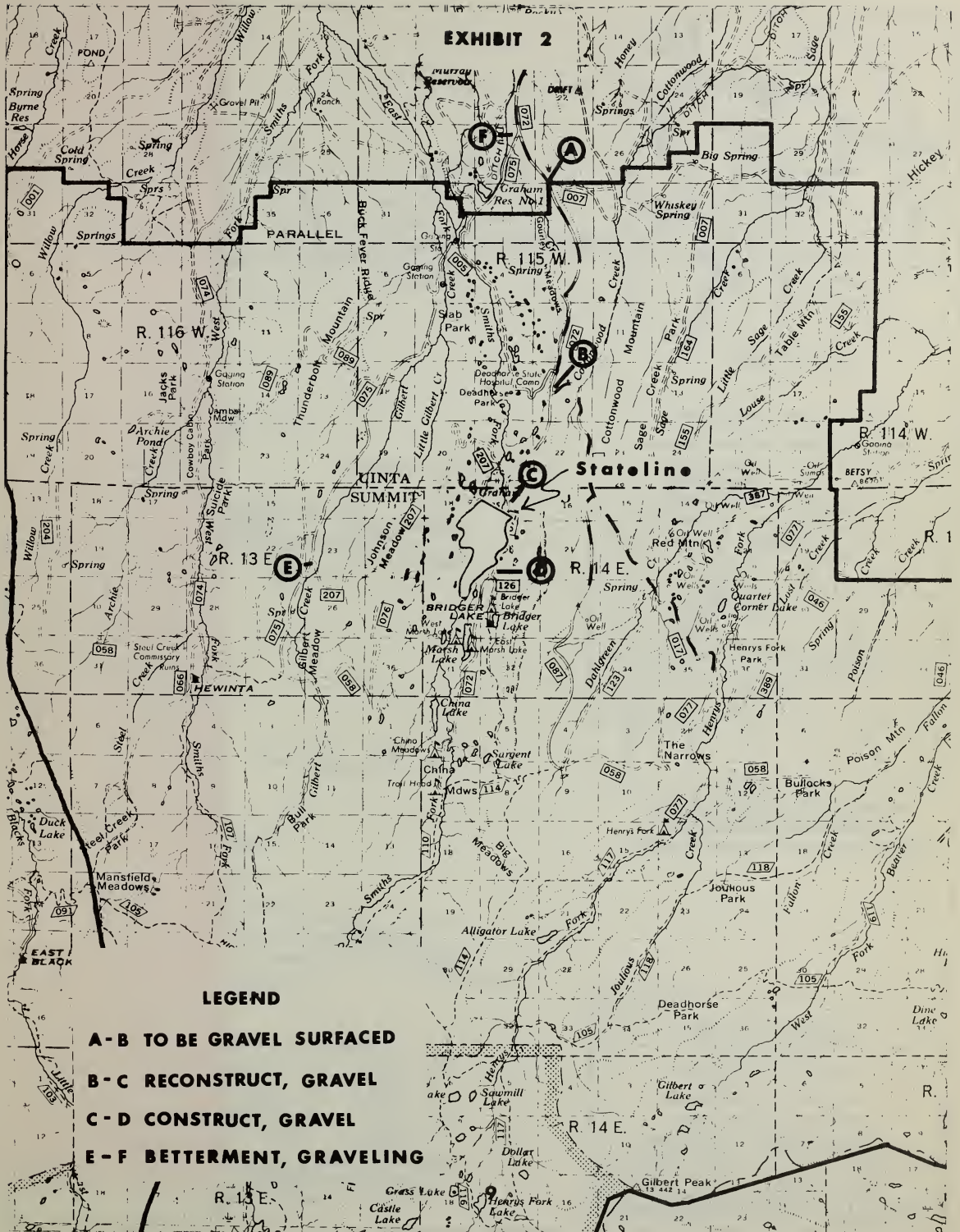
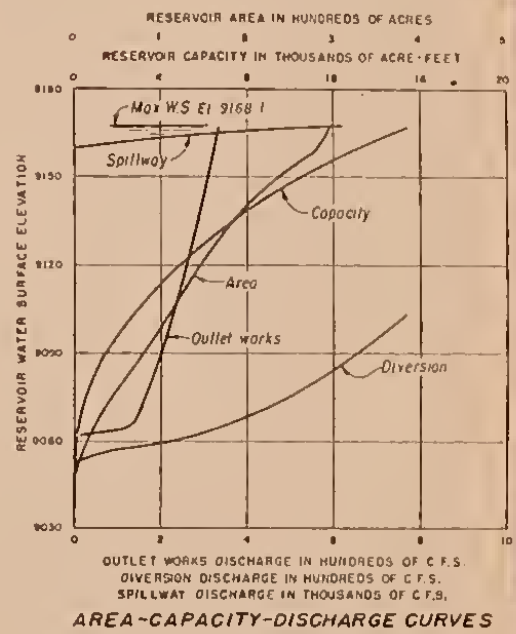
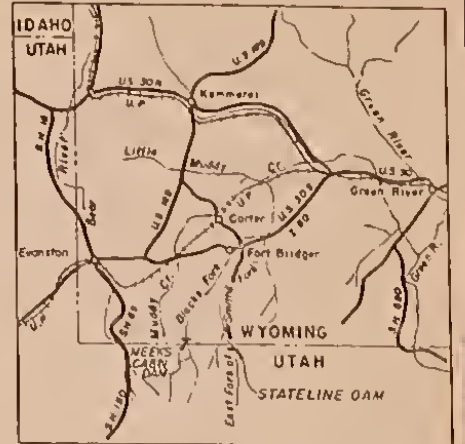
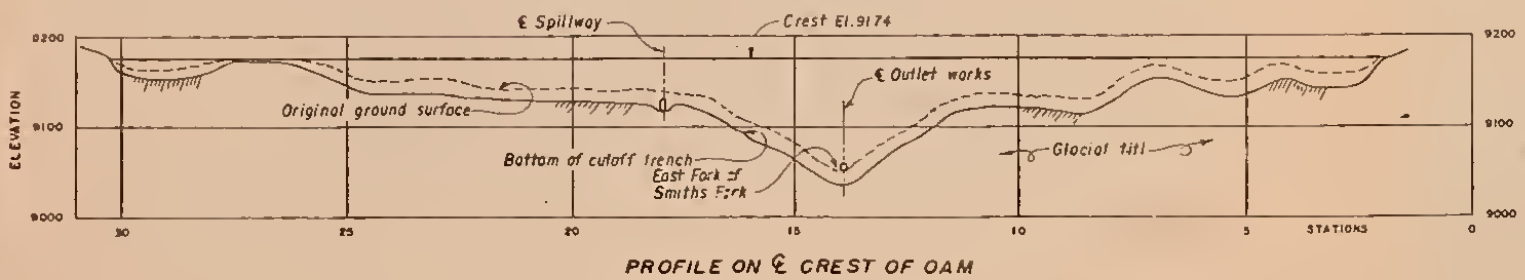
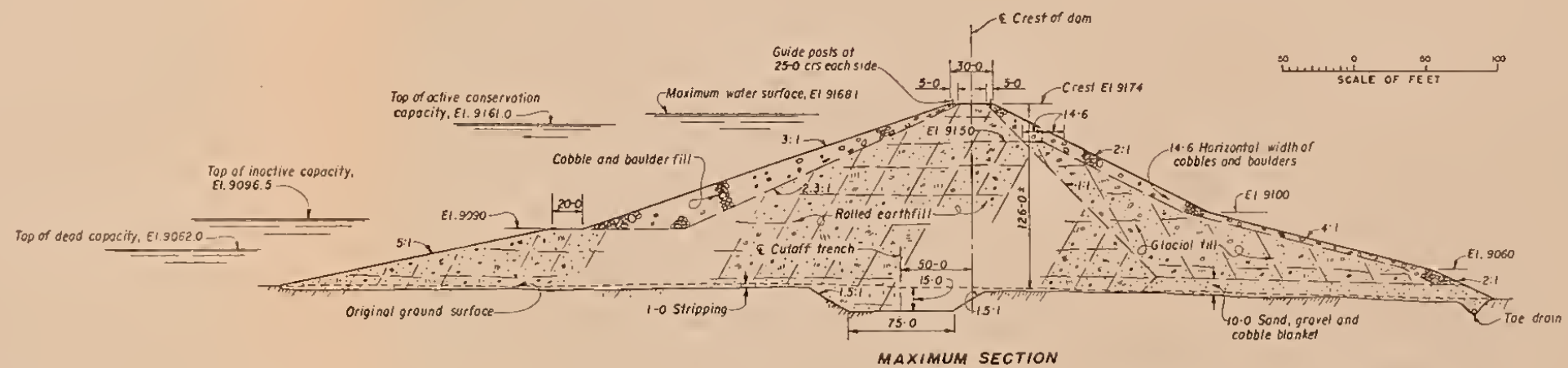
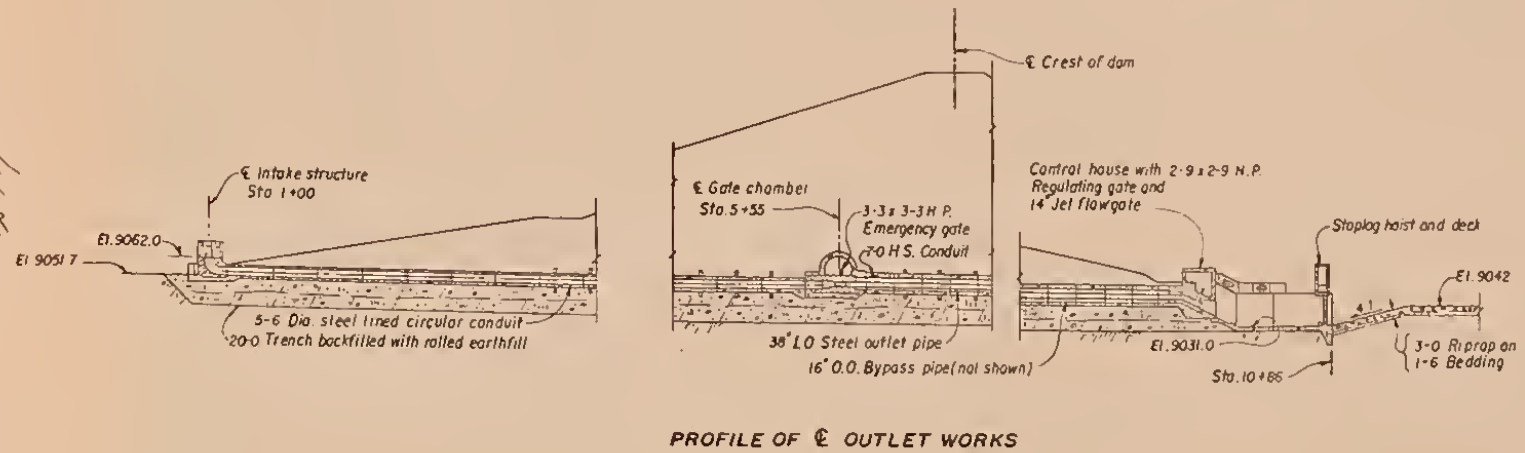
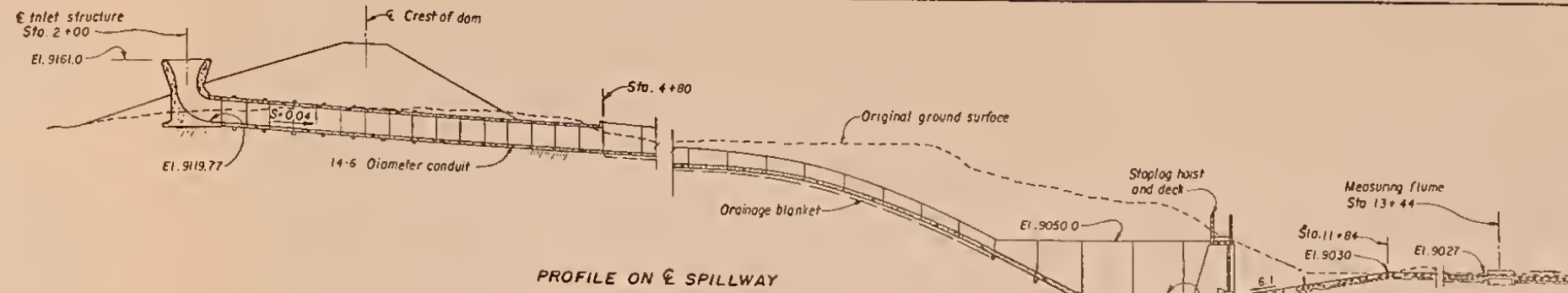
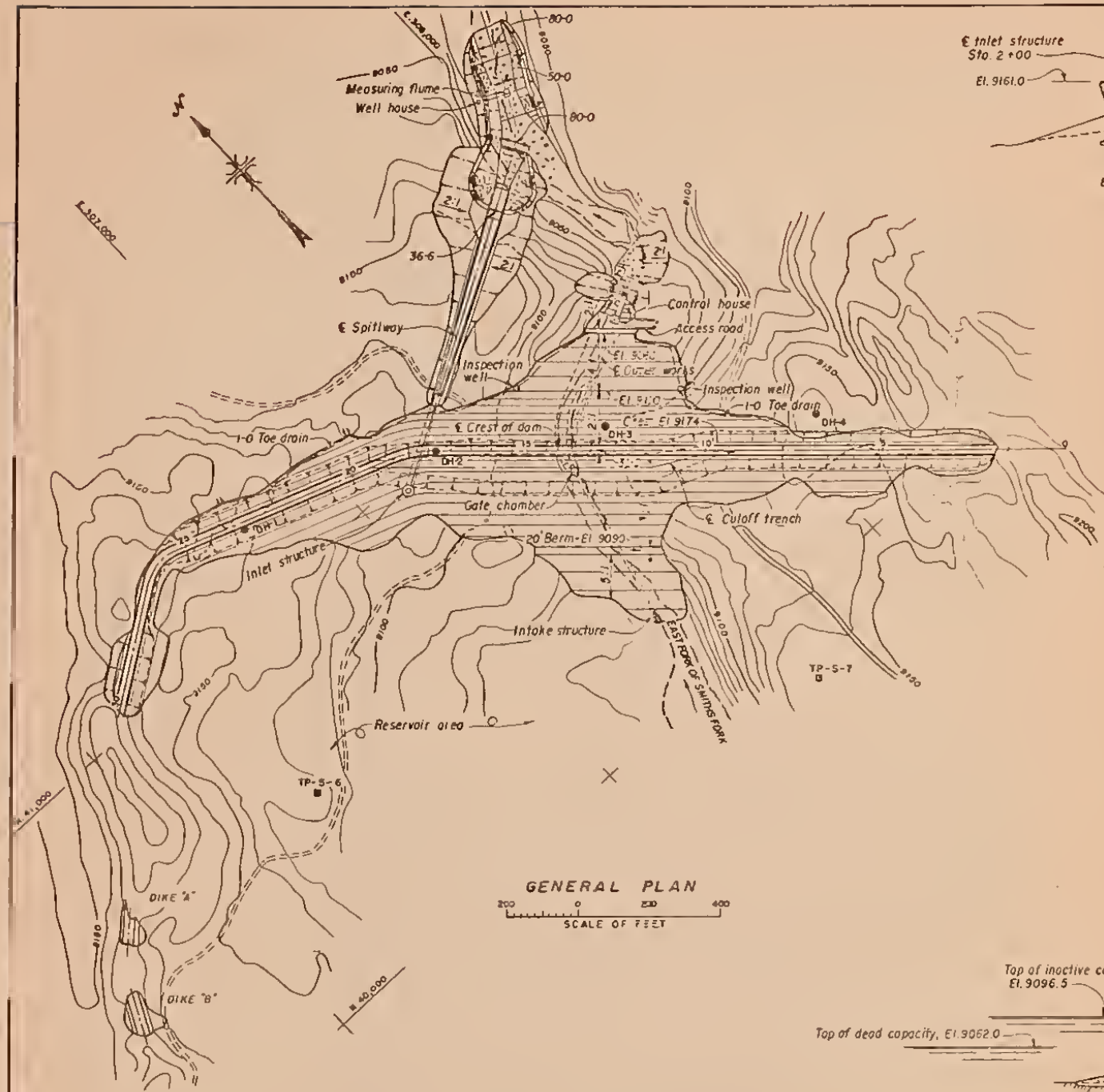


EXHIBIT 2





RESERVOIR CAPACITY ALLOCATIONS		
PURPOSE	ELEVATIONS	CAPACITY ACRE-FEET
Active conservation	9096.5 to 9161.0	11,400
Inactive	9062.0 to 9096.5	1,880
Dead	Streambed to 9062.0	120
Total reservoir capacity		13,400

A surcharge of 2,070 a.f. (Max. W.S. El. 9168.1) in combination with a spillway discharge of 6,200 c.f.s. and a river outlet discharge of 330 c.f.s. is provided to protect against the inflow design flood which has a peak of 7,630 c.f.s. and a 15-day volume of 35,300 a.f.

1-7-74
D.M.C.

ALWAYS THINK SAFETY

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
CYMAN PROJECT-WYOMING-UTAH

STATELINE DAM
FEASIBILITY DESIGN DRAWING

DESIGNED BY: R. A. KUBICKI
DRAWN BY: R. E. J. J. J.
CHECKED BY: E. C. BAZZILLON
APPROVED BY: D. J. DUCK
Richard W. Bock, G. H. Austin, 301 DIRECTOR OF DESIGN AND CONSTRUCTION
DENVER, COLORADO, JANUARY 28, 1974

145-D-227

III. LANDOWNERSHIP AND PROJECT BOUNDARY

A. Landownership. All of the land surrounding the dam and reservoir within the National Forest boundary is National Forest land. There are no land withdrawals in the area.

B. Project Boundary and Site Evaluation.

1. Proposed by Applicant. The Stateline Project is located in northeastern Utah on the East Fork of Smiths Fork drainage which is within the Green River Basin, tributary to the Colorado River. All of the lands to be served by the Project are located in Wyoming's Bridger Valley which extends from the foothills of the Uinta Mountains northward for about 20 miles. Water from the Stateline Reservoir would be used for supplemental irrigation of about 10,200 acres of land located in Uinta County, Wyoming. (See location map #145-407-192 located behind the title page.)

The Stateline Reservoir would be formed by a dam across the East Fork of Smiths Fork. The dam would be formed by rolled earthfill and rockfill structure, and would contain about 921,000 cubic yards of material. The dam would have a crest length of 2,800 feet with a maximum height of 125 feet above streambed.

The dam would be located in Section 17, Township 3 North, Range 14 East, on the East Fork of Smiths Fork in Utah about $\frac{1}{2}$ mile south of the Wyoming-Utah State line. The reservoir would be located in Sections 17, 18, 19, 20, and 30; Township 3 North, Range 14 East. It would have a total capacity of 13,400 acre-feet, of which 2,000 acre-feet would be inactive storage for fish management and recreation; 10,000 acre-feet for irrigation; 1,000 acre-feet for minimum flows, and 400 acre-feet transfer storage for stabilization of Marsh Lake; 1,100 acre-feet may be allocated for municipal and industrial water for the rapidly expanding population in the Bridger Valley.

The Definite Project Plan provided for 8 c.f.s. release for stream fisheries below the previously proposed China Meadows Dam during the nonirrigation season. Now that the proposed site has been moved downstream, the accretion is caught in the proposed Stateline Reservoir. A pipe, with a capacity of 2 second-feet was planned to route a small part of the releases to the East Fork of Smiths Fork through Marsh Lake, thus, guaranteeing that fish in Marsh Lake would no longer winter kill. This release to Marsh Lake is not possible under the Stateline Proposal.

The Stateline Reservoir would inundate an area of 285 acres at the top of active storage level. Current use of this area is mainly for recreation, grazing, wildlife, fishing, and timber production. Inundation of the reservoir site would require relocation 0.6 miles of the present road.

Barrow areas and access roads will remove surface vegetation, soils, and disfigure the natural contour of the land, degrading esthetic quality and exposing them to surface erosion.

2. Proposal by Forest Service. Additional sites within the National Forest evaluated by the Bureau's Multi-Objective Planning team are:

1. Section 30
2. Gilbert Meadows
3. Dead Horse Park
4. China Lake
5. Bridger-China Lake
6. China Meadows

Other than China Meadows, the Forest Service has not fully evaluated the above alternative sites.

Other alternatives not studied by the Multi-Objective Planning team are diversion of unsubscribed water from Meeks Cabin, reconstruction of Marsh Lake and/or enlargement of China Lake.

As an example, the Meeks Cabin alternative may function as follows:

Presently, about 68 percent of the available storage in Meeks Cabin Reservoir is subscribed to by water users. The remaining 32 percent could be considered available for appropriation. This water could be diverted and transferred to the East Fork drainage. Actual physical transfer of the water could be accomplished in a number of ways. A diversion dam and canal, or a pumping station and canal, are two possibilities. Meeks Cabin Reservoir contains 30,000 acre-feet of available storage for irrigation use. Computations show that 32% x 30,000 acre-feet equals 9,600 acre-feet, which is almost equal to the planned capacity of available irrigation storage at the Stateline Reservoir. Through transfers of water rights, the water needs of the irrigators could be met and eliminate the need for Stateline Dam and Reservoir.

The Forest Service does not have any proposals to offer other than that provisions of the National Environmental Policy Act be met with full evaluation of all alternatives by an interdisciplinary team.

IV. CHARACTERISTICS OF AREA

- A. Project Area and Immediate Vicinity. Stateline Reservoir is proposed to be located on the East Fork of Smiths Fork one-half mile south of the Utah-Wyoming state line. The East Fork flows through the project area with a slight to moderate gradient. It is flanked on the east side by a steep side hill with about a 60 percent slope. The west side has far less sloping glacial deposits supporting stands of grass, forbs, sagebrush, willows, lodgepole pine and aspen. There are numerous potholes, and narrow scattered meadows through which the stream meanders.

The geological formation of the area is part of the Uinta uplift which is a broad anticlinal arch extending 125 miles in an east-west direction. During the Pleistocene Ice Age, the area underwent extensive glaciation. The retreat of the glaciers left a blanket of glacial outwash and moraine debris which extends far into the Bridger Valley. Present day stream erosion has cut through the glaciated material in places exposing the older formations. Rocks ranging in age from Cambrian to recent are exposed in some of the canyons. However, the streams are generally entrenched in glacial till throughout most of their length. Glacial deposits cover almost all the Stateline Reservoir area.

These rocks consist of shales and thin layers of fresh water limestone, and are presumed to be the Bridger formation of Tertiary Age which is known to be present in adjacent areas. They are also indicative of the Uinta Fault which traverses the north slope of the Uintas in an east-west direction.

The soils in the area are deep deposits of glacial materials. The meadows are of alluvial deposition with thick organic surface layers over clay subsoils. Other soils are well drained with cobbly, sandy loam textures. They become coarser textured and more cobbly with increase in depth. Slumping is evident in the immediate area and had been described as stabilized slumps in their present state.

Vegetation at the stateline site consists of timber, shrubs, grass, and forbs. The meadow vegetation consists of approximately 50% grass, 35% forbs, and 15% shrubs which are primarily willow. Scattered stands of aspen and shrubs occupy the ecotone between the meadow and conifer type. The aspen stands have an understory of vegetation composed of approximately 45% grass, 50% forbs, and 5% shrubs. The mountain brush type averages about 30% shrubs, 35% grass, and 35% forbs. The timber is lodgepole pine and aspen. For a complete list of plant species found in each vegetative type, see appendix A.

Deer, elk, and moose inhabit the area, along with beaver, muskrat, mink, birds, and waterfowl. No rare or endangered species of wildlife are known to inhabit the area. Reference is made to the bird and animal list contained in appendix B. The East Fork supports a natural spawning population of cut-throat trout, which is indicative of a healthy stream in good condition.

B. Project Affect of Key Values

1. Key Values. Some of the resources, activities, and facilities on or adjacent to National Forest land which would or could be affected by the project are the fish, wildlife, recreation, timber, and range resources, and natural beauty as well as road, trail, and administrative facilities, fire protection, and special use permits.

The flows of the East Fork Smiths Fork would be altered^{1/} with resultant effects upon fish habitat and populations. The relocation of big game species, formerly inhabiting the area could create additional impacts in existing areas. Big game values could also be lost along the fringes of the reservoir as well as the new road through increased travel and public use.

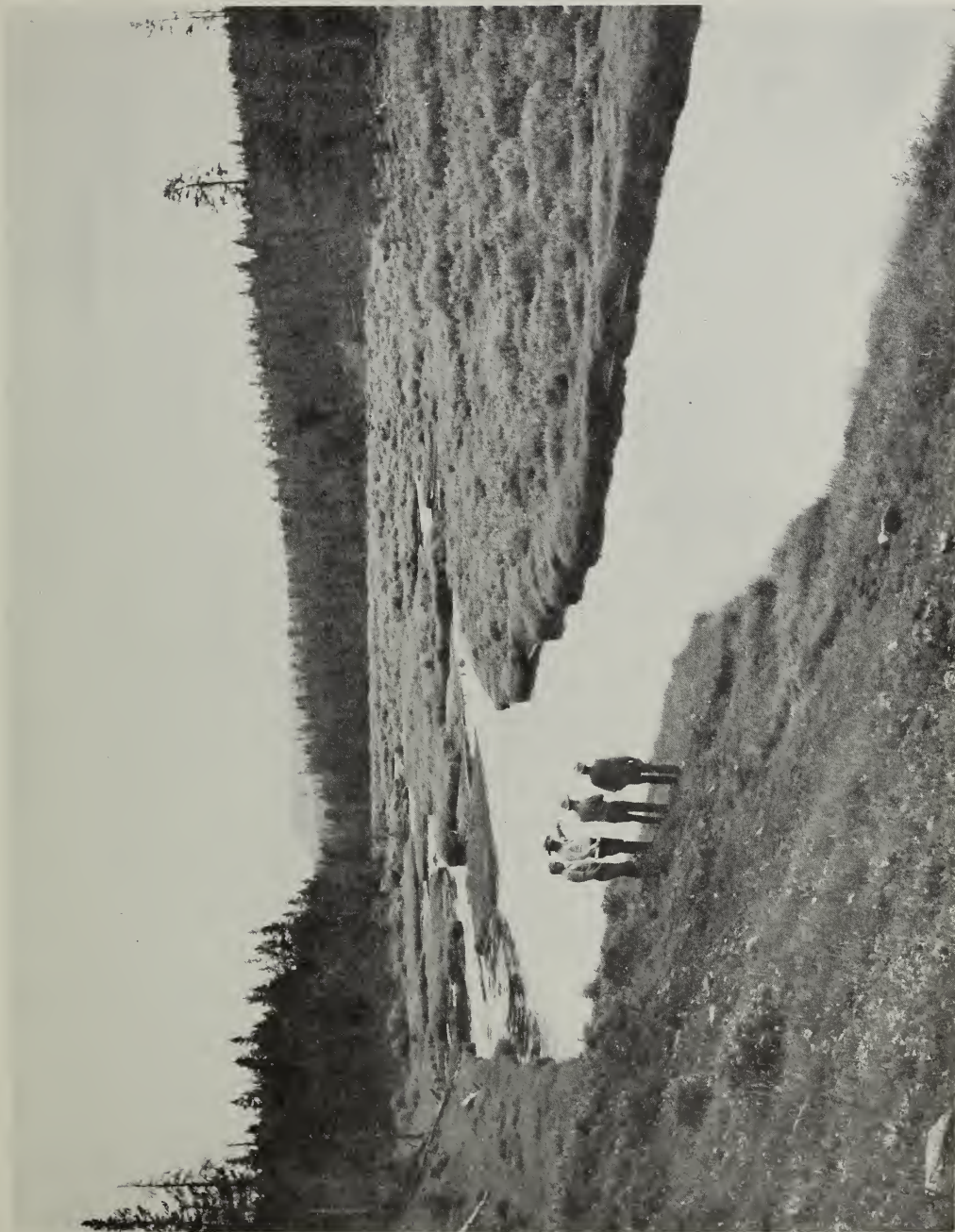
Timber would be removed from the right-of-way along the new road and proposed aggregate borrow area. Grazing management and livestock distribution would be disrupted on the East Fork Smiths Fork cattle allotment.

The wide variations in reservoir levels and resultant exposed mudflats would detract, in some years from the natural beauty and aesthetics of the immediate area.

2. Special Classifications. The entire drainage within the National Forest boundary has been designated as the East Fork Smiths Fork Barometer Watershed. The objective for creation of the barometer watershed is to place watershed science fully at the service of the National Forest resource management program. This provides an organized system of representative, instrumented watersheds to:

- a. Aid in providing land and resource managers with information needed to protect or improve the soil, water, and dependent resources.

^{1/} See Noel Larson Report on Degradation of East Fork Smiths Fork in appendix.



East Fork Smiths Fork - Looking upstream
at Stateline Reservoir Site.

- b. Establish a means of: (1) measuring the general direction and magnitude of change over time in quality, quantity, and timing of water yields, in soil deterioration or improvement, in soil stability, and in sediment production, and (2) relating those changes to the combination of various land uses, management practices, and natural phenomena that take place within a watershed.
- c. Test on an operational scale and under multiple and sustained yield guidelines, soil and water management prescriptions based upon criteria provided by research.
- d. Evaluate management operations in terms of (1) predicted versus actual effects on the soils and water resources and (2) degree of achievement toward meeting management goals for those resources.
- e. Provide suitable demonstration and training areas.

The drainage contains hydrologic and meteorologic instrumentation both above and below the proposed damsite.

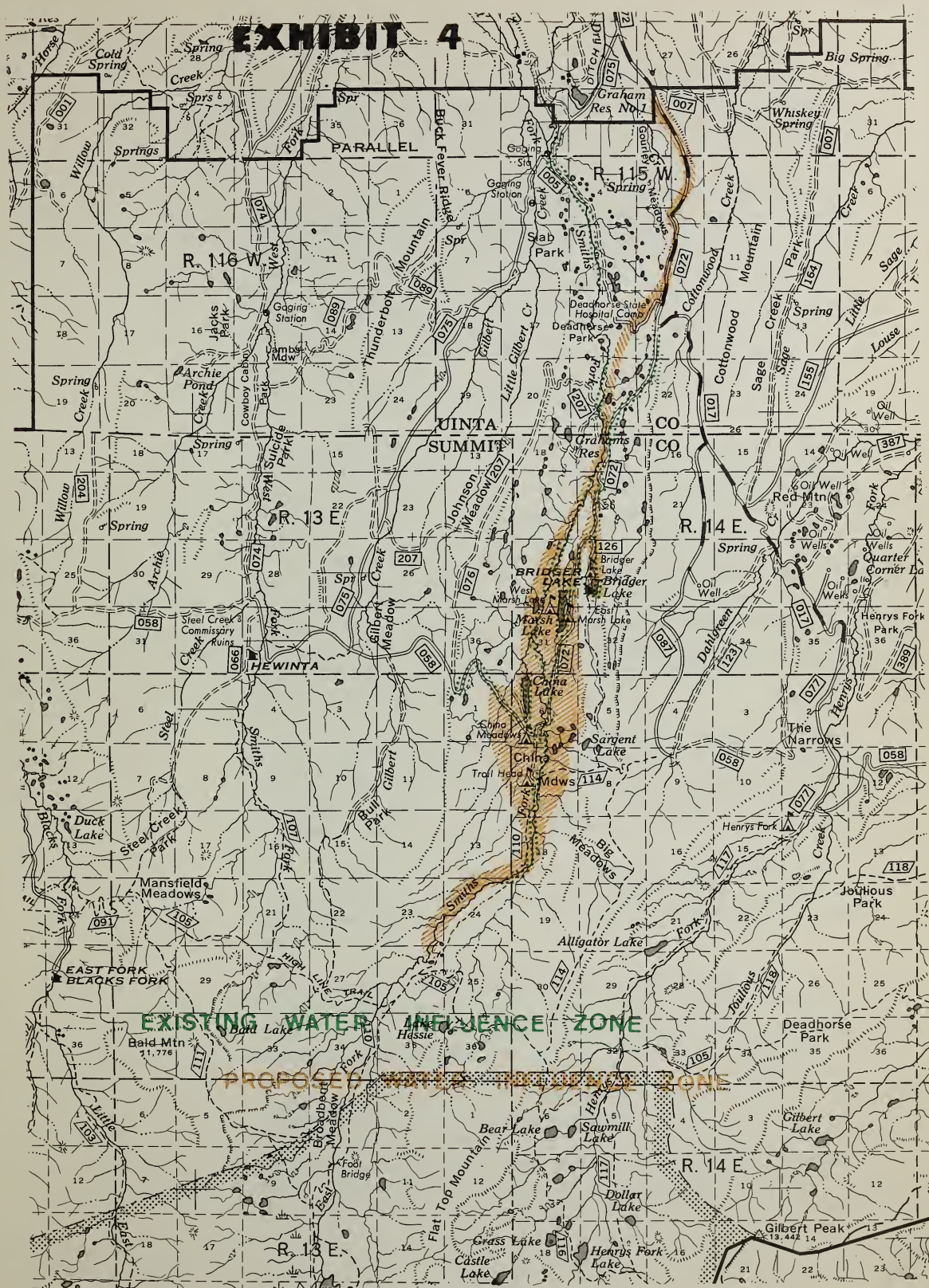
- 3. Special Treatment Areas. Downstream from Stateline are several glacial potholes which have the potential to help offset the loss and degradation of fisheries habitat lost in connection with both features (Stateline (Proposed) and Meeks Cabin) of the Lyman Project. These ponds are referred to as Pomavek Lakes. It is proposed to transform these ponds from stagnant ponds into fresh lakes capable of supporting fish populations. Water would be diverted from the East Fork Smiths Fork via pipeline to the lakes and back to the stream. This proposal will benefit primarily the people of Wyoming, since it is located in this state. Further explanation of this project is contained in Part V, F.

C. Zone of Influence of Project.

- 1. Broad Area (Offsite) Effect of Project. Principal towns and trading centers within the project area are Mountain View and Lyman, Wyoming. There are three smaller communities: Fort Bridger, Robertson, and Urie.

Population characteristics of the project area show a rapid increase in population from 1973 to date. The 1974 population of the project area is presently estimated at 3,636. Latest population estimates for the towns in

EXHIBIT 4





the project are: Lyman, 1,643; Mountain View, 700; Fort Bridger, 325; and Robertson, 45. It is estimated the population of the Bridger Valley will reach 20,000 by 1980.

Access to the project area from Interstate 80 and U.S. Highway 30S, which combine and connect with Rock Springs, Wyoming, 64 miles to the east, and Ogden, Utah, 117 miles to the west. Interstate 80 is a main east-west highway across the United States. The Union Pacific transcontinental railroad passes north of Bridger Valley. A freight depot is located at Carter, Wyoming, about 7 miles north of I-80. The project area is 26 miles south of Bridger Valley. Access is by a well-traveled road which is presently partly paved.

The economy of the project area is predominately agricultural with emphasis on the production of beef cattle, sheep, and dairy cattle. Other industries important to the area are the public service industry, transportation, and trade (wholesale and retail). Lumbering has not been of primary importance in the past, mainly because other use demands are higher. There is considerable new interest in oil and gas. The trona mines to the east are expanding rapidly and becoming a major factor in employment of people. This expansion has caused an increased demand for industrial and municipal water. With project development, municipal demand could be met.

The climate of the Bridger Valley area is cool, semi-arid, with freezing temperatures having been recorded in every month of the year. The average frostfree period is about 92 days. Mean annual temperature is 41° with extremes ranging from 27° below zero to a high of 102°.

High winds are common. The climate limits the types of crops grown in the area and the major crops grown are meadow and pasture hay, with some alfalfa, barley, and oats.

With project development, water stored from spring snowmelt would be used to irrigate crops in July and August. The East Fork Smiths Fork water is presently inefficiently used or lost during the spring runoff and provides little benefit to ranchers for irrigation. The supplemental water resulting from this proposal would make possible in some years a second cutting of alfalfa, and, if better irrigation practices are followed, would enable the farmers to raise a better yield of pasture and meadow hay. Increases in forage production should allow more livestock to be raised and in turn influence farm income.

2. Salinity Potential. The whole Colorado River Reservoir Complex has contributed to the total salinity buildup in the lower Colorado River.

Individually, the salinity increase from each reservoirs return flow waters, and changes in free flowing stream discharges, may not seem significant. However, accumulatively each new reservoir adds its seemingly small salt contribution to the total Colorado River system water quality deterioration.

The Bureau of Reclamation, or other qualified agency, should evaluate the impact from the Lyman Project Reservoirs, particularly any addition of the Stateline (Proposed), to the water quality deterioration.

3. Rural Environment Opportunity. Increased farm productivity should provide limited increase in farm employment opportunity which presently is mainly the teenage boy during the summer months. Machinery repair and maintenance would increase employment opportunities.

Regulated release and distribution of stored water would necessitate the construction of better irrigation systems and associated facilities. Agencies such as the Soil Conservation Service would provide technical assistance on these projects, and the Agricultural Stabilization and Conservation Service provides Federal cost-sharing programs for these improvements. Programs such as these could also provide for increased employment opportunities.

V. RESOURCE VALUES AND NEEDED COORDINATION REQUIREMENTS

- A. Range. The planned project is located near the middle of the East Fork Smiths Fork Allotment. There are four permittees grazing 504 cattle under National Forest term permit and 12 head under private land permit for a total of 1,743 AUM's. Roughly 140 acres of suitable range, supporting about 45 animal months would be inundated. No adjustments will be necessary in grazing permits to compensate for the loss of useable range since the other lands of the allotment can absorb this loss.

Construction of the reservoir will disrupt the movement of cattle grazing the allotment. South of the Utah-Wyoming state line the allotment is long and narrow, varying in width of 2-3 miles and extending southward for 9 miles. The current pattern of grazing permits cattle to drift along the East Fork to make use of the higher range south of the state line. Completion of the project will affect livestock distribution by blocking free-choice movement of cattle to 15,000 acres of the allotment south of the state line, since the East Fork is the only existing route to gain access to the area.

In order to secure the same degree of range management, the construction of 1 mile of fence and 1 cattleguard will be required on the south end of the reservoir. The proposed range improvements will prevent cattle from drifting down the road and into the planned recreation complex. These improvements are very important to minimize conflicts with recreation and are in the interest of proper range management practices.

Construction of the reservoir would require borrow areas for road surfacing material and a concrete aggregate source. These areas would be small and have little effect on the carrying capacity of the range. However, they would require fencing for protection from livestock to insure rehabilitation of the sites.

- B. Soil-Water Relationships. The East Fork Smiths Fork watershed above the project area is in good condition. The watershed area receives about 25 inches of precipitation mostly in the form of snow and yields approximately 33,230 acre-feet per year.

There are differences of opinion over the values of transitory and consumptive uses of Stateline water compared to the onsite values in the form of the present free-flowing stream. Downstream values are best portrayed by the number of acres irrigated, the value of commodities produced, reduction of flood hazard, and irrigation benefits. The onsite values are best portrayed by the aesthetic values and the maintenance of the present ecosystem equilibrium.

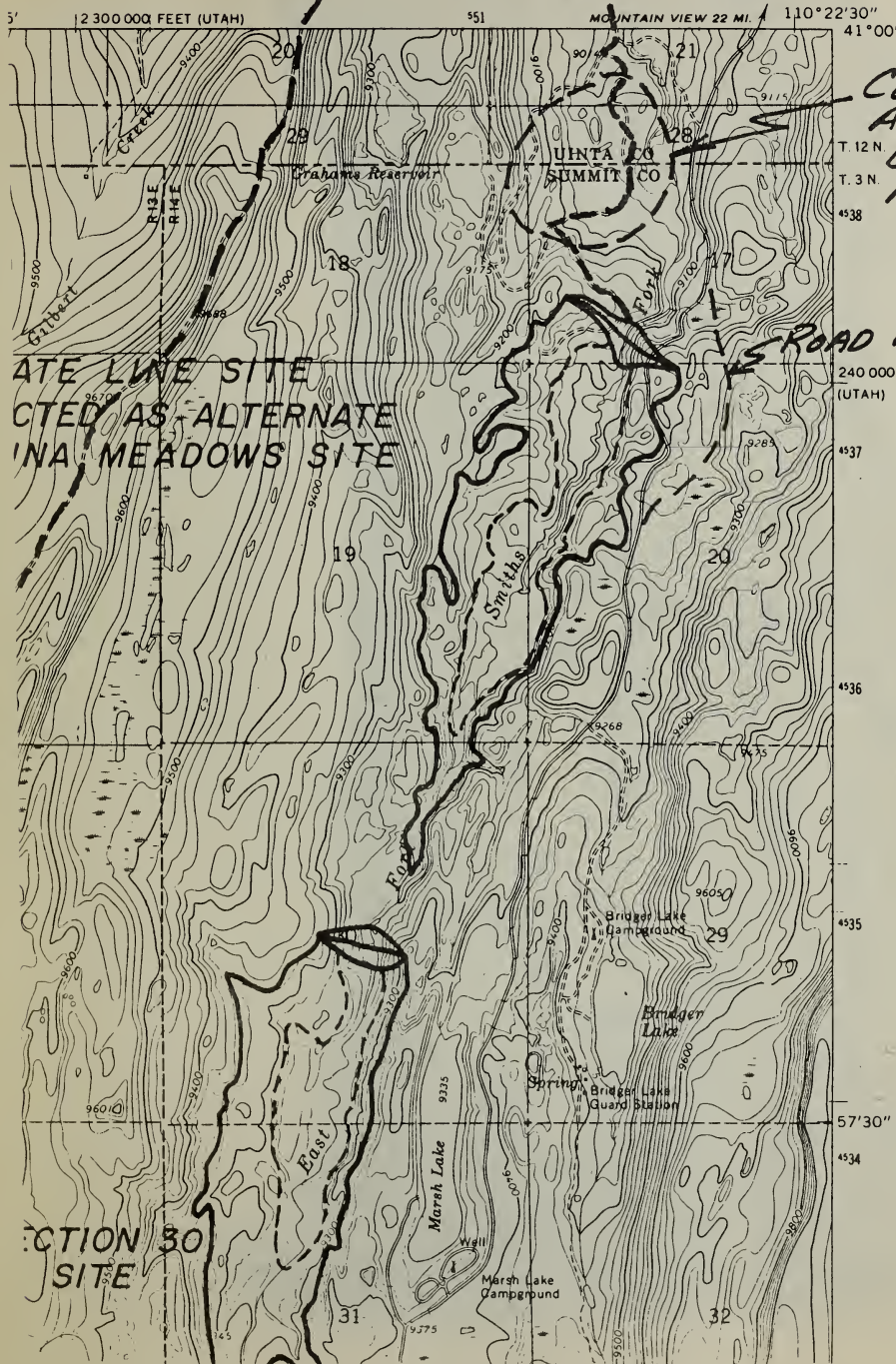
EXHIBIT 5
BRIDGER LAKE QUADRANGLE
UTAH-WYOMING
7.5 MINUTE SERIES (TOPOGRAPHIC)

EXHIBIT 5

BRIDGER LAKE QUADRANGLE
UTAH-WYOMING

7.5 MINUTE SERIES (TOPOGRAPHIC)

3956 III SE
(TABLE MOUNTAIN)



CONCRETE
AGGREGATE
BORROW
AREA

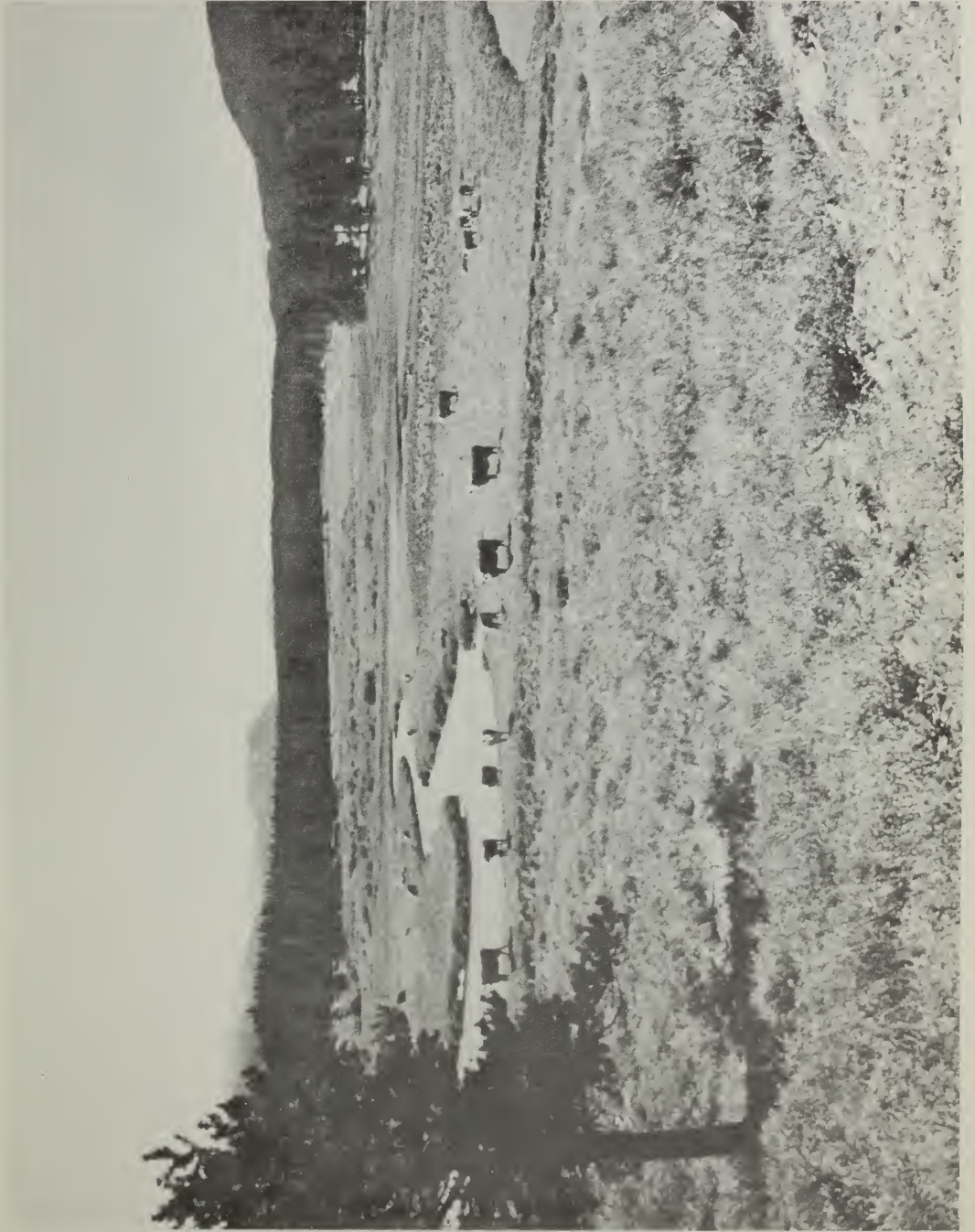
ROAD RELOCATION

240 000 FEET
(UTAH)

57'30"

4534

21



Permitted livestock grazing above the Stateline

Beef cattle and sheep are presently the main types of livestock in the Bridger Valley area with dairy cattle next in importance. Irrigated lands are used almost exclusively for production of livestock feed. Croplands are devoted chiefly to meadow hay and alfalfa. The crops are harvested during July and August and stored for winter feed. With additional irrigation, a second crop could be harvested during warmer years.

Approximately 10,000 acres of land would be served by the Stateline (Proposed) and Meeks Cabin Reservoirs. Irrigation benefits have not been segregated by the two features of the Lyman Project, but are listed for the project as a whole. Irrigation benefits from the Lyman Project have been estimated at \$405,700.00 annually, including \$258,800.00 in direct benefits, \$135,700.00 indirect benefits, and \$11,200.00 in public benefits. The estimates were made for a 100-year period of analysis with accrual of only partial benefits during the 3-year development period computed at the rate of 2-7/8 percent.*

Economic evaluation of onsite water values in the form of free-flowing stream has not been done. The many intangible values involved, i.e., aesthetics and natural beauty, make this an extremely difficult economic evaluation. Presently, there is much public sentiment being expressed which places extremely high values on these factors.

Construction of the proposed dam and reservoir would affect both the short and long-term quality of water in many ways. During trenching and excavation of the damsite a high rate of stream turbidity could be expected. Additionally, during the 3-year construction period the contractor would be required to divert and bypass the natural flow of East Fork past the damsite. This could result in an increase of turbidity and sedimentation. When the vegetative cover is removed from reservoir basin and reservoir borrow areas are opened, additional material could be washed into the stream.

Much of the stream sediment resulting from construction activity could be reduced by a series of small debris basins. The small meadow immediately below the spillway could provide an excellent area of low gradient for this purpose.

Silt laden water would be generated by such operations as aggregate processing, concrete batching, and other construction activities. (Exhibit 6 shows the recommended locations

* Irrigation benefits quoted from Definite Plan Report for Lyman Project, November, 1962, Bureau of Reclamation.

::::: reservoir impact area



for aggregate, borrow, and riprap.) Desilting ponds could be used to contain this water before it is returned to the stream. Any measures taken for this purpose within the reservoir would have to be located where they would be safe from heavy spring runoff to prevent stream siltation. With impoundment, water quality will be affected proportionally to the number of people in the area.

Aquatic and noxious weeds should not be a problem because of high elevation, cool temperatures, and drawdown.

According to a published report by the U. S. Department of Health, Education, and Welfare, Public Health Service, aquatic insect pests should be of no more significance at the Stateline Reservoir than they are at other water bodies on the North Slope.

Evaporation losses from the reservoir have been estimated to be slightly higher than the present evapotranspiration losses in the reservoir basin. Average annual evaporation losses at the Stateline would amount to approximately 650 acre-feet as compared with present evapotranspiration losses in the reservoir basin of 620 acre-feet, according to Bureau of Reclamation statistics. Some water from the reservoir would be lost through seepage into underground strata. These losses have been estimated at 200 acre-feet per month.

The effects of the project upon water quality downstream are of considerable concern. Controlled discharges from the drainage would increase the consumptive use of water. Water temperatures below the points of diversion would be increased. Consumptive use of the water may alter or increase in the salinity concentration downstream. There is considerable concern that increased salinity concentrations in the Flaming Gorge and other downstream reservoirs could be detrimental to the fishery resource.

On site National Forest management will be directed towards maintaining water quality. Control of the disposal of all wastes resulting from recreation development will be necessary.

Design of recreation sites and roads should allow for the protection of the watershed, the heavy impact upon the land, adequate runoff, and minimizing sedimentation.

During the construction period it would be necessary for the contractor and Bureau of Reclamation to similarly effect control of the disposal of wastes, and other factors as they may relate to water quality.

The suitability of glacial till as foundation for the dam is questioned. The need for a firm footing for the dam cannot be underemphasized. This is a prime concern in light of recent dam structure problems in previously constructed Meeks Cabin and Fontenelle Dams.

The Uinta Fault (which bisects the reservoir near the south end) and future movement along it present a threat that is difficult to speculate upon, but this possibility and its effects upon the dam should be evaluated in depth when selecting among alternate damsites. Some seismic activity has been located in the Uinta Mountains area. As the mountains consist of an uplifted block of rigid rocks, there appears to be minimal danger from earthquakes, but earthquakes with epicenters near the intersection of the Uinta Mountains and the seismically active Wasatch Frontal Fault Zone could trigger landslides and rock avalanches in the Uinta Mountains.*

* From Intermountain Association of Geologists publication Geologic Guidebook of the Uinta Mountains, 1969.

C. Outdoor Recreation.

Approximately 156,000 visitor days or approximately 45 percent of the recreation use which is reported on the Mountain View District occurs within the East Fork of Smiths Fork drainage. Approximately 80 percent of the recreation traffic destined to other areas utilize the transportation facilities through this drainage. Much of the use can be attributed to a number of natural lakes, all of which provide average to good fishing. Also available are numerous developed and undeveloped recreation sites which are extremely popular. Diversity of recreation persuit can be found over a relatively small area within this drainage. Some of the most diversified scenic quality to be found on the north slope can also be enjoyed.

The recreation resource within the East Fork of Smiths Fork is not comprised of single items of attraction. The elimination of numerous high value recreation components makes total drainage recreation planning imperative.

The proposed Stateline site is presently without recreation development. With the exception of hunting and fishing use which is not significant, dispersed use is generally absent. Its existing value is presently found in its scenic quality.

Bridger Lake which is located approximately one mile above the proposed site contains nineteen family units. A spring provides drinking water.

Marsh Lake which is located approximately two miles above the site contains thirty three family units but does not have drinking water.

Approximately four miles above the site the China Meadows campground provides nine family units. A spring provides drinking water as well as a constant supply of fresh water to a small pond immediately adjacent to the campground.

About one-half mile to the south of China Meadows campground is the wilderness trailhead. This is the "jumping off" spot to the High Uintas Primitive Area, and especially to the very scenic and popular Red Castle Area. Wilderness Trailhead contains five family units for overnight camping, a sanitation facility, parking area, and two horse unloading ramps.

China Lake, although without development, receives dispersed use as does the stream from a point near the trailhead to Marsh Lake.

Present recreation use in this area is heavy. Studies conducted during recent years indicate that recreation use is increasing rapidly. The Mountain View Ranger District has experienced a 16 percent increase in recreation use each year since 1971.

Use during the 1974 recreation season has increased even more significantly. Rapid increases in use are attributed to rapid population increases in Bridger Valley. Existing facilities in the drainage received about 25,800 visitor days of use per year.¹⁾ This represents an occupancy rate of 57 percent over a 100-day season of use. An occupancy rate over 40 percent is considered to be detrimental to those sites.

Heavy use in this drainage generally occurs on weekends and holidays. On numerous occasions during heavy use periods recreationists are forced to camp in dispersed areas.

It is not uncommon for users to visit two or more lakes in the same day in pursuit of good fishing. This is particularly true of older people who utilize the lower areas while they await the return of high country users in their party.

Some disruption of use would occur during construction. Public traffic through the construction area would have to be restricted and controlled. Heavy equipment operating within the construction will create some public hazard as will vehicles travelling to and from the site. Stream fishing within the reservoir basin would be eliminated during construction.

Construction of the reservoir would substantially change existing use patterns within this area. Although not presently significant existing stream associated recreation use would change to boating and lake fishing. Hiking would still be a recreation activity, although the opportunity to view wildlife would be reduced as stream and meadow habitat were inundated.

The insertion of a reservoir with recreation opportunities duplicating those in the upper portion of the drainage would result in similar use of this site. Existing weekend and holiday use saturation at existing sites presently results in heavy use of undeveloped areas which now serve as overflow areas. Major use adjustment could be expected in the entire drainage. New interest would also be generated.

Of particular concern would be interest by Bridger Valley residents who do not now have municipal park or recreation facilities. A reservoir with as near a proximity to these communities as proposed could create significant onsite demands.

The presence of an irrigation reservoir by virtue of its late July, August drawdown will create a significant drainage carrying capacity fluctuation. It could be assumed that use at

¹⁾Dispersed area use not included in this use figure.

the Stateline site during high water would shift to developed areas in the upper portions of the drainage during low water.

To alleviate anticipated onsite recreation impacts some development appears imperative. Areas suitable for development near the proposed reservoir shorelines are extremely limited. One suitable area has been identified along the east shore as reflected on page 31.

The Forest Service would propose development of a high density campground with 45 to 50 single family units. Development would occur on approximately eight acres under a concept as displayed on page 33.

The facility would provide for limited picnicking and overnight use. It would also provide car-top boat launching facilities.

Development of an off-site spring with approximately 6 acre feet capacity would be needed. An application for water rights would be necessary.

Fishery mitigation has a possibility for the Pomavek Lakes area. See page 43. This would have the effect of stimulating use at an additional site as the fishery became productive. Its Wyoming location suggests that day use by local area residents will occur. A minimum facility for camping, parking, and sanitation would be needed. A small campground with 12 family units would serve the recreation needs at Pomavek. Too large of a facility would encourage overuse of the fisheries.

During recent years the Forest Service has been faced with a complex problem of solid waste disposal. Six two unit pit toilets now exist within the East Fork of Smiths Fork drainage. During the 1974 recreation season these pit toilets generated approximately 4,800 gallons of concentrated effluent. Disposal occurred in the Lyman City sewage lagoon. The Lyman facility is presently over-taxed and no facilities are available at Mountain View. The Forest Service will be forced in the very near future to make other arrangements.*

A new reservoir would tend to compound this already severe problem. It will generate a more eminent need to provide treatment facilities that would handle national forest effluent. The State of Wyoming does not require total containment for treatment plants. Taking this into account the following treatment plant system would be proposed at a location now being proposed as a gravel borrow site. See Exhibit 6.

* A 30 unit campground and associated boat ramp at the Meeks Cabin Reservoir slated for development in F.Y. 1977 will add to the problems now existing.

1. Provide minimum size aerated cell (0.3 acre-surface) Pond "A".
2. Provide minimum size polishing pond (0.5 acre-surface) Pond "B".
3. Provide disposal bed or evaporation pond, Pond "C" approximately 0.1 acres.
4. Water supply shall be collected surface water (non-potable) from Cottonwood Creek. Provide pressure tank for receiving station and blow down requirements.
5. Provide housing for air system components.
6. Provide fence around complex.
7. Provide single phase power with three-phase converter and adequate one-lane service road.

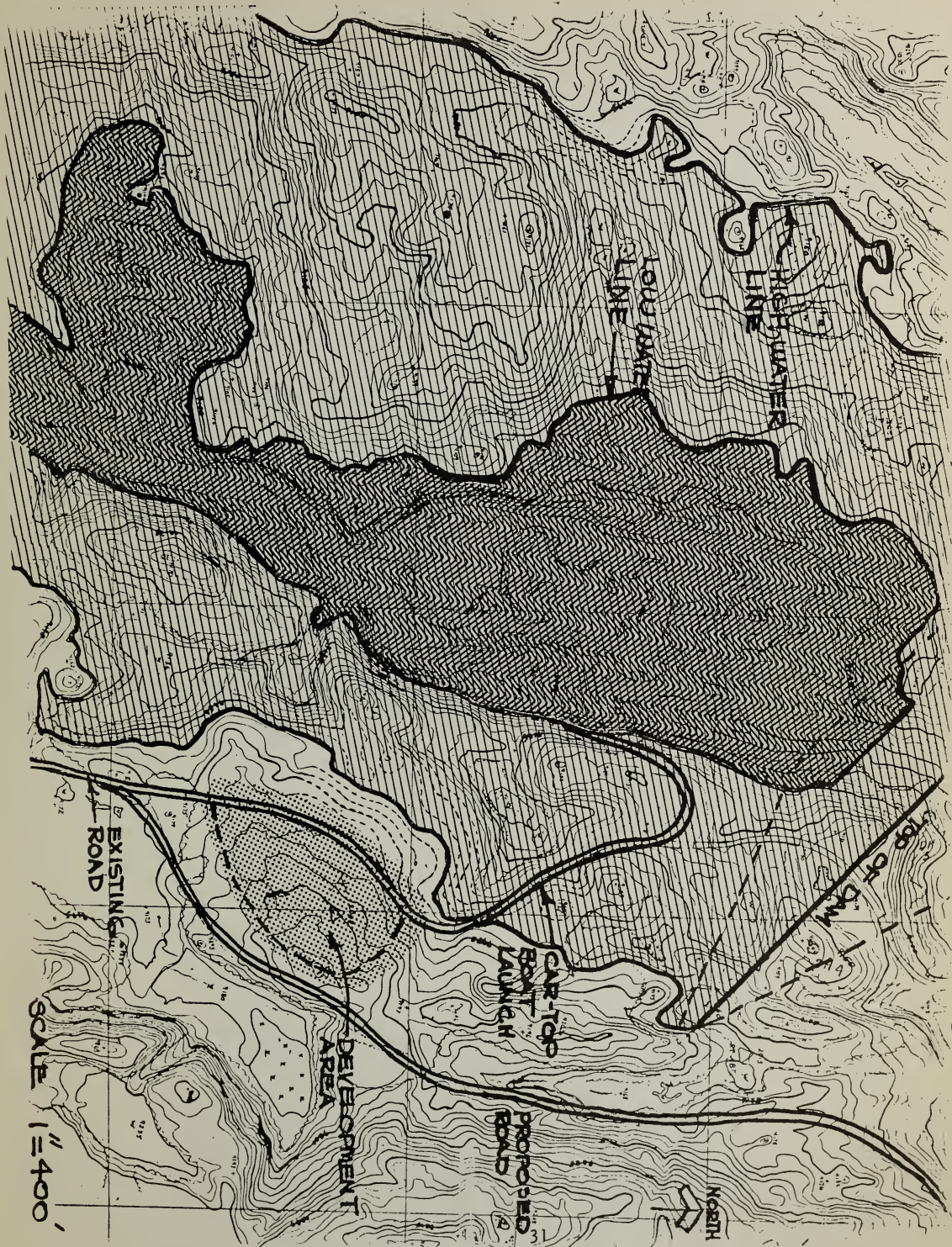
D. Scenic Quality

In its present condition the East Fork of Smiths Fork provides a scenic introduction for recreationists destined for highly developed recreation sites in the upper portion of the drainage. The area is comprised of a long moderately dissected drainage of good definition. The mix of conifers and aspen combined with the homogeneous land type form a striking background relief of the High Uintas Primitive Area. It provides outstanding visual variety as one enters this portion of the Wasatch National Forest. It could be described as somewhat distinctive in scenic quality when viewed from the Forest boundary.

The interior of the East Fork of Smiths Fork drainage and particular onsite visual quality could be described as common in variety. The topography is mostly rolling with few slopes over 30 percent. The vegetation consists of lodgepole pine and aspen with numerous willows in the meadows and wet areas. Much of the pine is dead or infested with mistletoe. Old growth timber occupies the majority of the area.

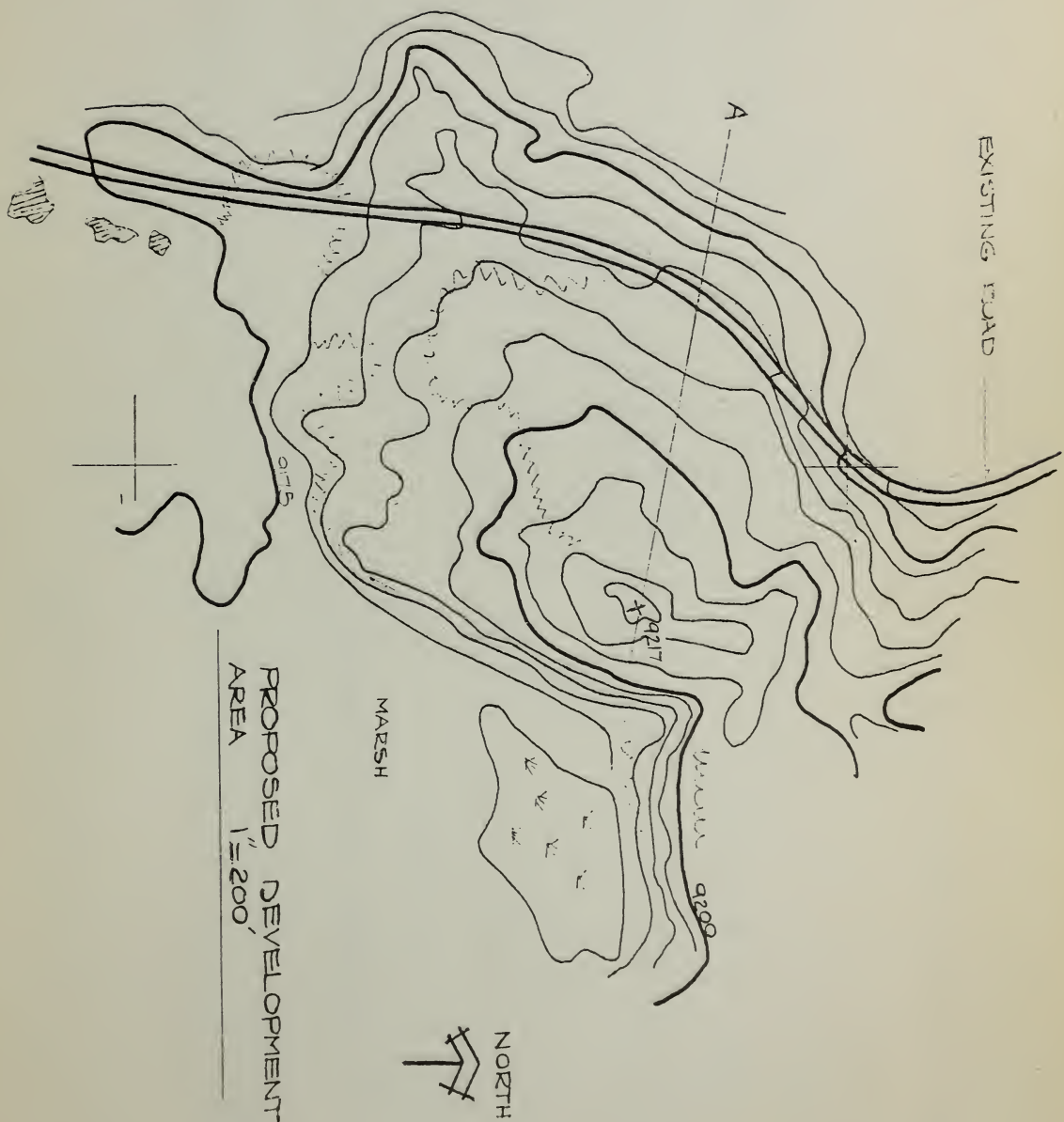
Since the area is served by a primary travel route where more than one fourth of the forest visitors have a high concern for scenic quality it would have a high sensitivity level. A sensitivity level of 1 would be applied to this area by the Forest Service.

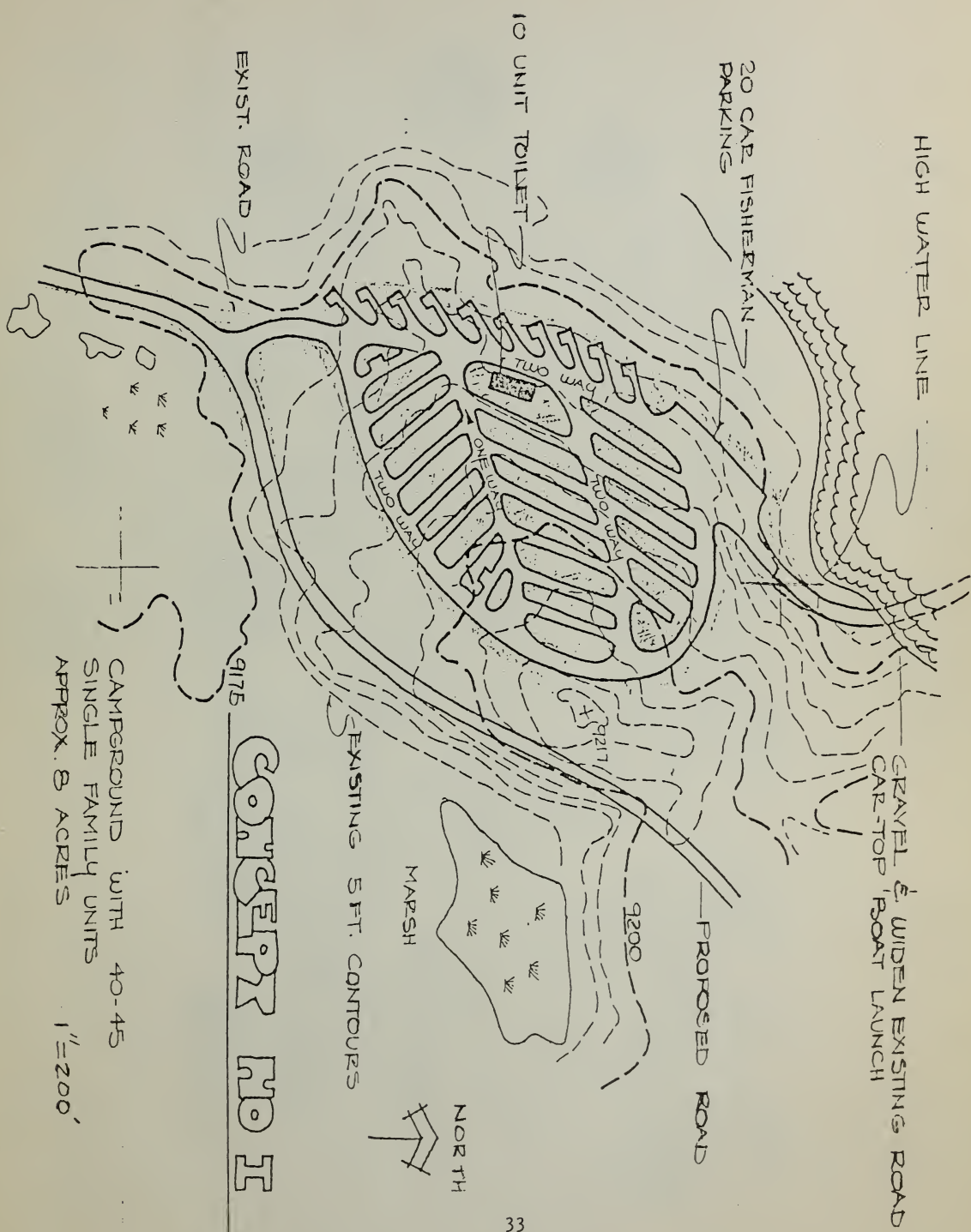
Under present management, the combination of this variety class and sensitivity level would result in a visual quality objective of retention. Under this quality objective Forest Service activ-



SCALE 1"=400'







HIGH WATER LINE

20 CAB FISHERMAN
PARKING

GRAVEL & WIDEN EXISTING ROAD
CAR-TOP BOAT LAUNCH

PROPOSED ROAD

10 UNIT TOILET

EXIST. ROAD

9175

COTTER POINT

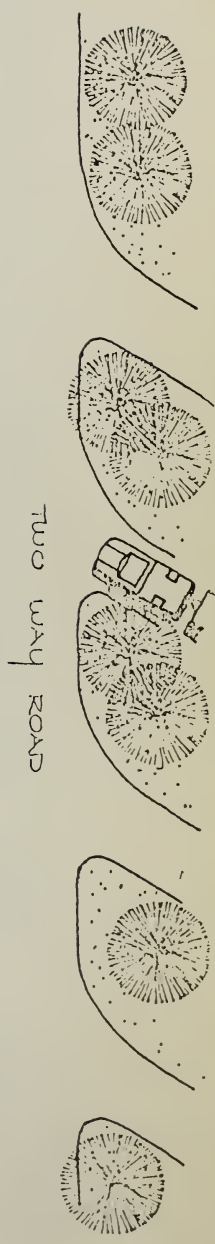
EXISTING 5 FT. CONTOURS

MARSH

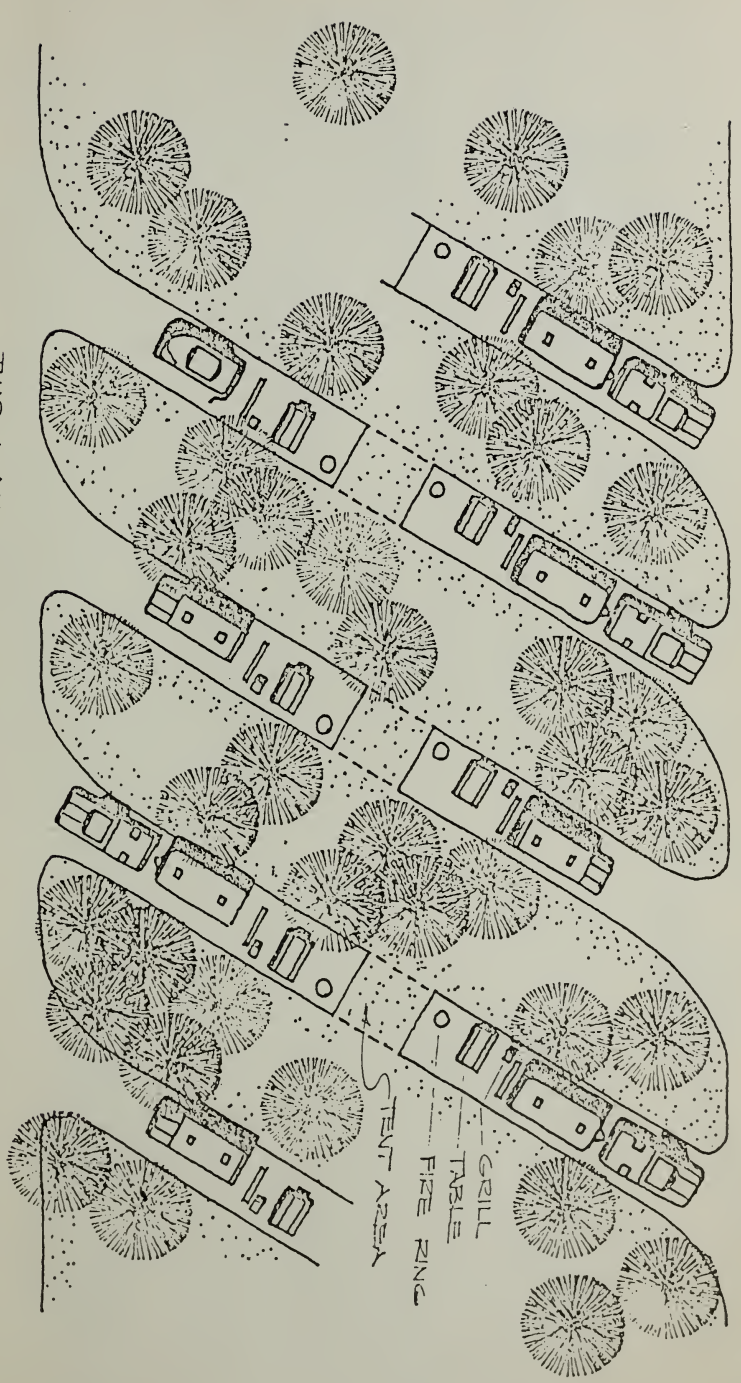
NORTH

CAMPGROUND WITH 40-45
SINGLE FAMILY UNITS
APPROX. 8 ACRES

1"=200'



two way ROAD

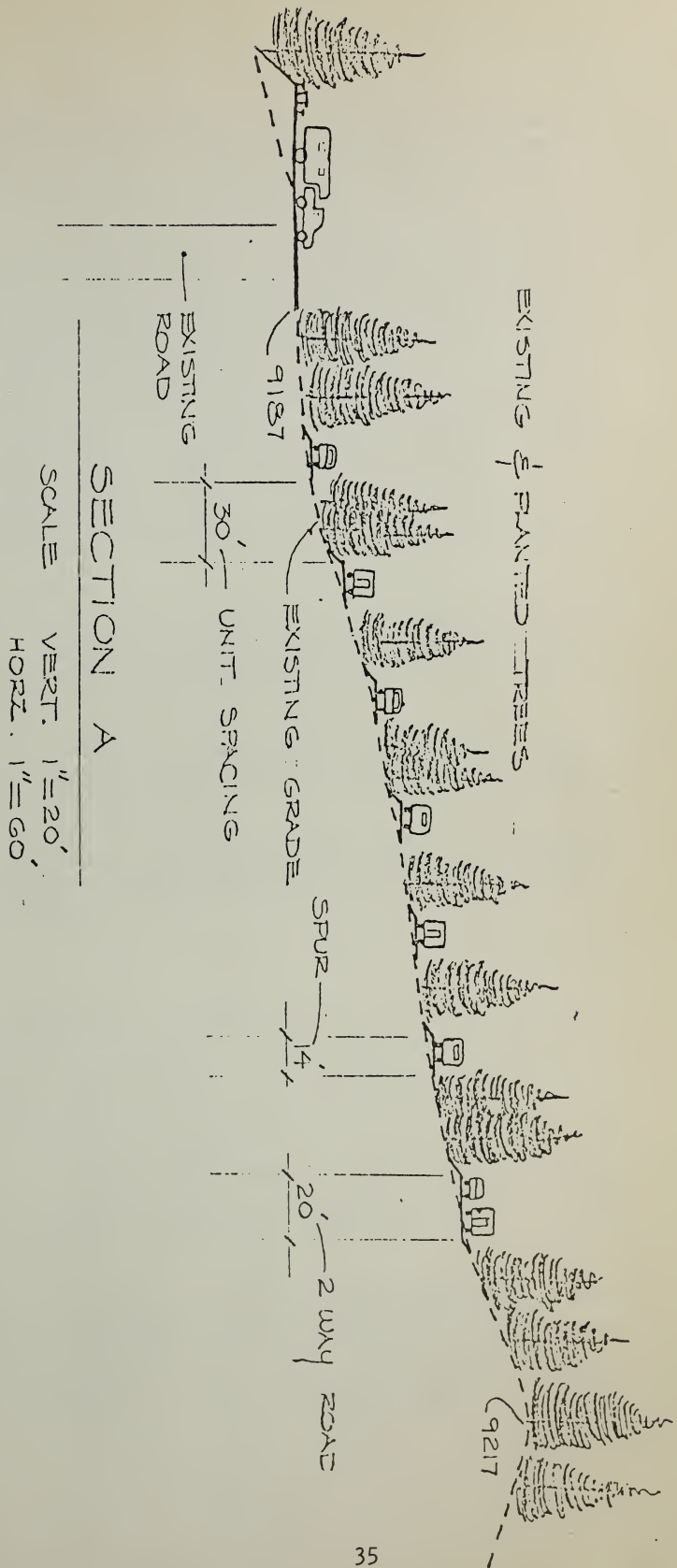


two way ROAD

SCALE 1"=30'

CONCEPT NO. 1

ALTERNATIVE NO. 3



ities have attempted to repeat form line, color, and texture which are found in the existing landscape. Changes in their qualities of size, amount, intensity, direction, pattern, etc., would not be evident.

Insertion of a man-made earthfill dam into the landscape would alter the existing natural setting of the area. Existing natural beauty of the area would be impaired by the unnatural appearance of the earthfill dam and by any unplanned disturbance outside of the proposed high waterline. Creation of the reservoir would change the character of the landscape from a valley bottom stream type to a lake type landscape. The greatest detraction to natural beauty would be a mudflat left during periods when the reservoir is drawn down. These flats would dominate the landscape during the peak part of the recreation season and would contrast even more sharply as aspen shed their leaves.

The reservoir would sharply contrast with present objectives of retention. The dam axis and late fall draw down would result in unacceptable modification of the scenic resource. Irretrievable scenic impact would occur.

Opportunities to screen the dam from visitors entering the Forest are prevalent but would diminish rapidly with downstream excavation necessities.

Opportunities also exist at the Stateline site for creating an interesting and variable shoreline which would serve to minimize the impacts.

E. Timber

There are 120 acres of lodgepole pine which will yield an estimated 300,000 board feet of sawtimber and 40 acres of aspen that would be inundated. The potential yield would be 600,000 board feet. Most of the lodgepole pine is in the sapling and pole size classes with the exception of many older trees which have suffered mortality loss from insects and disease. Values for both timber species would be small since it would be difficult to utilize this material. (Most of the land is marginal because of inaccessibility.) There are no active timber sales in the area.

The method of disposing of nonmerchantable material would be by burning or as otherwise directed by the Forest Service. The Memorandum of Understanding between the Bureau and the Service will cover all clearing and brush disposal requirements for the reservoir and road clearing areas.

- F. Wildlife and Fish. The proposed Stateline Dam and Reservoir would inundate approximately 285 acres affecting both fish and wildlife resources. Practically all of the area that would be inundated serves as big game summer range and winter range for moose. The summer range habitat affected would involve less than 1 percent of the total available on the North Slope.

Loss of wildlife habitat is permanent, and this loss in combination with that lost at Meeks Cabin Reservoir has been allowed for in project cost estimates. Under Section 8 authority of the Colorado River Storage Act, it is possible to mitigate certain wildlife losses through the purchase of other lands. The Lyman Project, which includes both Stateline and Meeks Cabin, has included as a nonreimbursable cost item, an allowance of \$50,000 to purchase 1,000 acres of land for big game replacement. To date, no land has been acquired. As land values continue to soar, the available dollars will allow for the purchase of fewer and fewer acres.

Wildlife losses should be mitigated acre for acre for the kind of habitat that is lost or affected. This also should include the aquatic habitat such as pond systems and stream environments. Preference should be given in replacing streams with equivalent streams.

There is growing concern that the amount of summer range on the north slope of the Uinta Mountains is inadequate for the growing elk and moose herds. Moose could use the Stateline area for 12 months during the year. Lands containing year-long range would be the most beneficial to acquire. A few suggestions of parcels of suitable private land which might be investigated are as follows. All will be very difficult to purchase with the existing allocations. (See Exhibit 7.)

	<u>Name</u>	<u>Owner</u>	<u>Acres</u>
1.	McGinnis Place	John Hamilton, 4/5 Mary U. Taylor, 1/5	360.00
2.	Johnson Ranch	Keith T. Johnson	400.00
3.	Taylor Place	Jean Taylor	559.40
4.	Gourley Meadows	Mary Beach	670.29
5.	Private lands on Blacks Fork drainage:		
a.	Sec. 24	Robert C. Byrne (est)	640.00
b.	Sec. 35	Maurice Henry	640.00

6. Private lands in Hole-in-the-Rock Area:

a.	Ponderosa Ranch	Lyman Grazing Assoc.	4,000.00
b.	Buckley Ranch	Harry Buckley	640.00
7.	Sage Creek Ranch	Glen Wadsworth	3,000.00
8.	Railroad Lands	Union Pacific R.R.	3,000.00

These lands are grazed by domestic livestock. Each contains suitable habitat for moose. If purchased, these lands could be reserved for big game use. Devices such as fences would be required in some instances to control domestic stock.

In addition to moose, the Stateline Reservoir area provides summer habitat for deer and elk. Beaver are abundant in the area, as well as other furbearing animals, upland game, and birds. A species list for all wildlife found on the North Slope of the High Uintas is included in the Appendix. This list reflects the anticipated effect of this proposed action on the various species of wildlife that could inhabit the area.

Stateline Reservoir would inundate about 1.8 miles of the East Fork of Smiths Fork in one of the better biologically productive reaches. The East Fork supports a population of cutthroat trout and whitefish and fishing is a popular recreation pastime in the area. Future fish stocking would affect recreational use of the proposed reservoir. The recreation use projections in Section C are based on the assumption the Utah Division of Wildlife Resources will manage the proposed reservoir as a fishery.

Generally, a stream supporting natural spawning populations is indicative of a healthy stream in excellent condition. The streams of the North Slope of the High Uintas, most being in good condition, have established an equilibrium with their environment over years of time. If conditions of the environment remain unchanged, this equilibrium can be maintained. Construction of the proposed reservoir would alter East Fork Smiths Fork stream conditions.

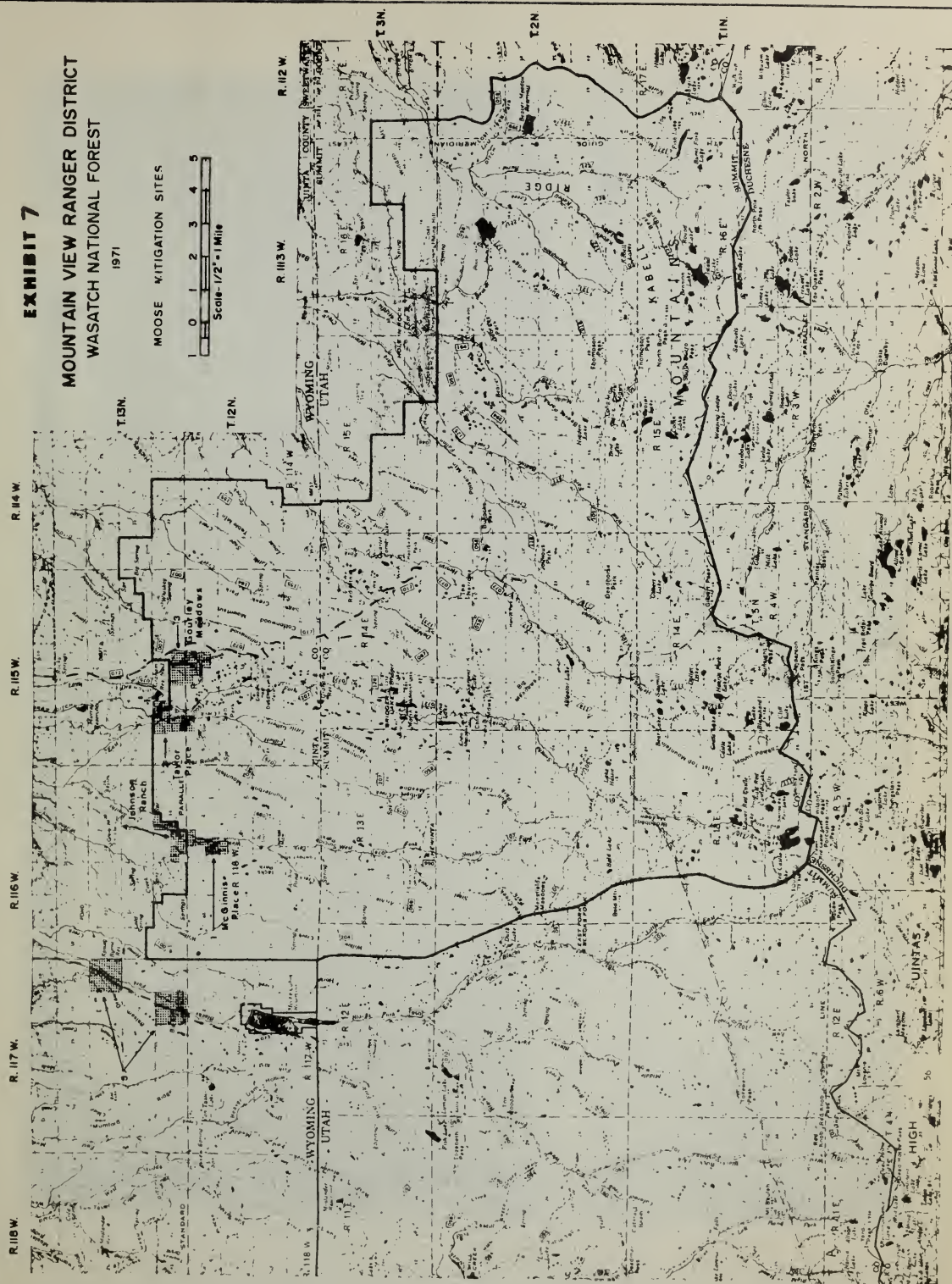
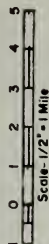
The Stateline proposed operation plan provides for downstream releases during the irrigation season which extends from June through August. Normal irrigation flows would range from 150 to 230 c.f.s. with peaks of 270 c.f.s., a serious safety hazard to downstream fishermen could develop.

EXHIBIT 7

MOUNTAIN VIEW RANGER DISTRICT WASATCH NATIONAL FOREST

1971

MOOSE MITIGATION SITES



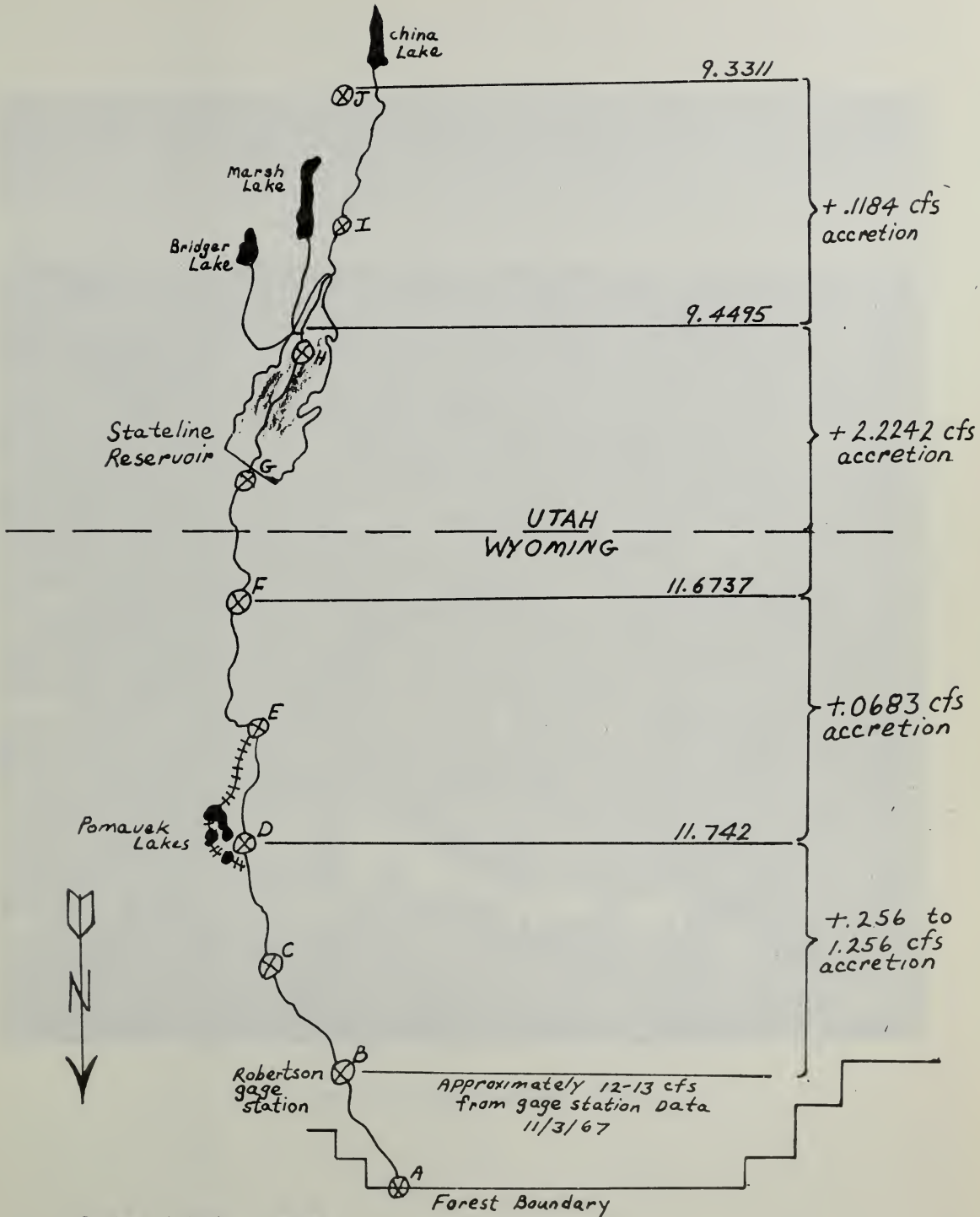


Moose grazing on East Fork



The meandering stream provides excellent fishing

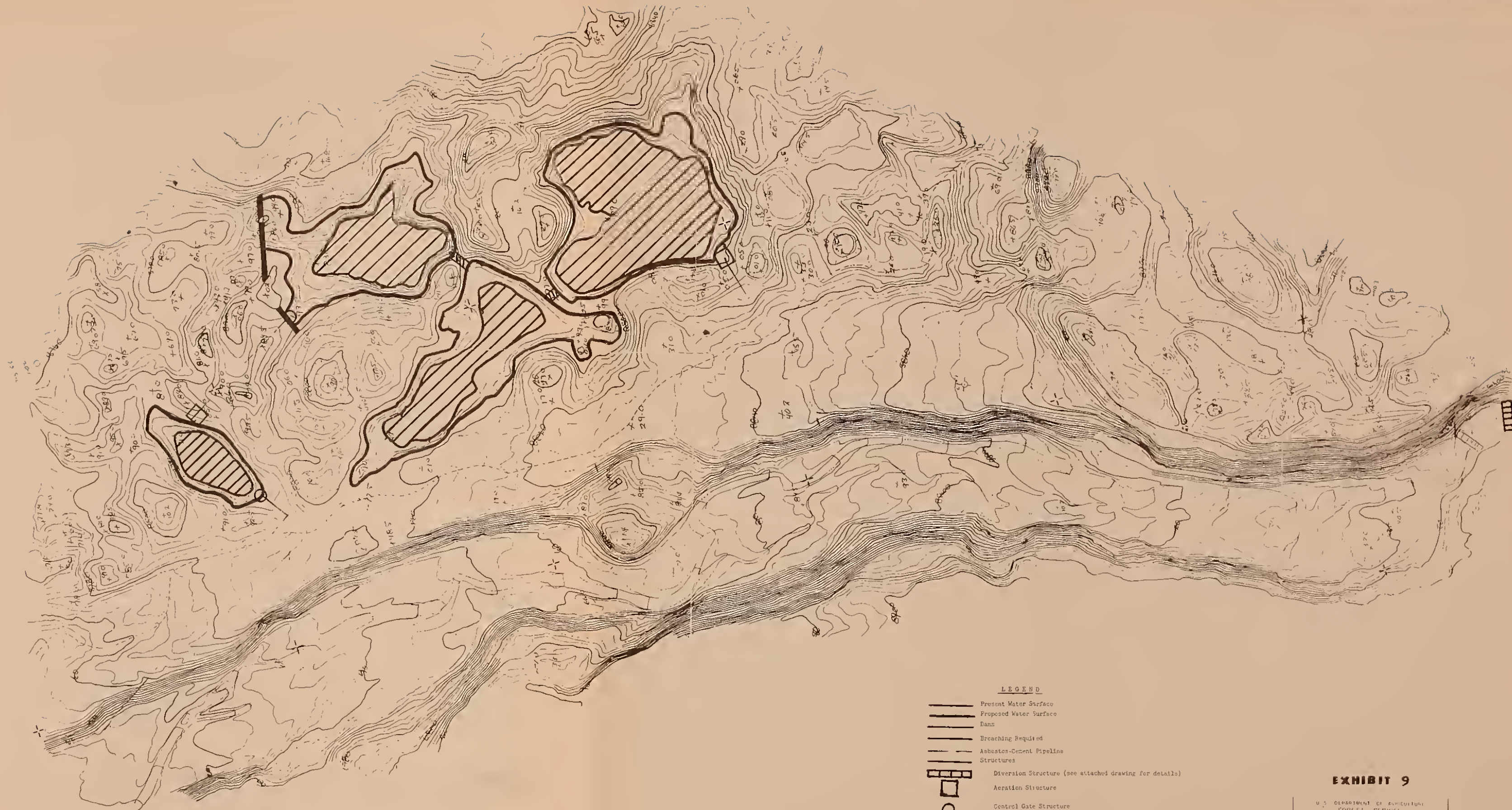
EXHIBIT 8



LYMAN PROJECT - STATELINE RESERVOIR



Aerial View of Pomavek Lakes



- LEGEND**
- Present Water Surface
 - Proposed Water Surface
 - Dams
 - Breaching Required
 - Asbestos-Cement Pipeline
 - Structures
 - Diversion Structure (see attached drawing for details)
 - Aeration Structure
 - Control Gate Structure
 - Contour Interval - 4 feet
 - Scale - 1 inch = 160 feet

EXHIBIT 9

U. S. DEPARTMENT OF AGRICULTURE
FOREST SERVICE
NATIONAL FOREST SYSTEM

**POMAVEK LAKES
STABILIZATION**

DESIGNED BY LDM	CHECKED BY LDM	DRAWN BY LDM	DATE 10/1/50
APPROVED BY LDM	CHECKED BY LDM	DRAWN BY LDM	DATE 10/1/50

There is great deal of concern about reservoir releases during the nonirrigation season. The Definite Plan Report for China Meadows recommended a minimum release of 8 c.f.s. during the nonirrigation season. This minimum release is not judged to be adequate to maintain the aquatic ecosystem of the East Fork Smiths Fork.

Studies conducted by Forest Service biologists recommend a minimum of 12 c.f.s. at the Robertson gauging station. Habitat values are greater in the first 3-1/2 miles below the dam than they are lower downstream. Exhibit 8 reflects downstream flows, including gains and losses, based on a hydrologic study conducted November 2, 1967.

Biologists have stated that in removing borrow from the reservoir basin, it is possible to manipulate the configuration of the side slopes in a manner more compatible with a natural fish habitat. Since borrow excavation for embankment material would be restricted to areas below the high waterline, it would be necessary to excavate in most of the reservoir area. Stripping of the borrow areas would remove all vegetal cover which might otherwise remain on the reservoir bottom. This plant material usually has a value for fish cover and nutrients for aquatic biota upon which fish feed. The Forest Service proposes to redesign the configuration of the inundated area to maximize the fishing benefits and minimize the esthetic impact. Bottom materials should include rubble material placed in properly oriented areas of the reservoir to maximize fish use. Debris or organic material should be left within the inundated area only by design based on the expected operation of the reservoir and on the bottom configuration.

Downstream as a part of a possible fisheries mitigation program for the Lyman Project, is the Pomavek Lakes. (See Exhibit 9.) This consists of piping water from the East Fork Smiths Fork through four glacial potholes and back to the stream again. The proposal would enlarge and change four stagnated glacial potholes into live lakes with oxygenated water which would cover about 21 surface acres. The only water that would be lost is by seepage and/or evaporation from the lakes. See Table 1 in appendix for costs.

- G. Air and Noise. Construction activity would temporarily affect air and noise qualities in several ways. Construction activity and increased traffic would create both noise and dust problems. Sprinkling to control dust would be necessary during the recreation season.

The normal routine of wildlife inhabitants would be temporarily disrupted due to noise and other activities. Some temporary out-migration and some permanent displacement will occur.

Burning of clearing debris and residue would result in air pollution. If conducted according to prescribed procedures designated by the Forest Service, this impact should be minimal.

- H. Land Use--Mining, Farming, Industrial, and Urban. There are no special use permits in the area presently. No mineral resources having commercial value have been found within the Stateline Reservoir site. Oil shale, oil and gas, phosphate rock, and bentonite are mineral resources known to occur in adjacent areas. The possibility exists that these resources may be present at some level below the reservoir area. However, it is considered unlikely that any minerals other than gas and oil will be utilized because of their great depth. Oil and gas, if found, could be extracted by directional drilling.

Pending construction of Stateline Dam and Reservoir, the Forest Service would need to withdraw new areas for recreation purposes. The Bureau of Reclamation has not made a withdrawal, it is estimated that approximately 10 acres will be withdrawn for recreation.

- I. Land Appraisal. The area selected for Stateline Dam and Reservoir has a high value for recreation purposes. Using the land for water storage removes it from a possible higher value use in today's economy. If lands had to be purchased from private owners rather than being acquired by withdrawal, the Project could become economically unfeasible and a more economic location would need to be selected. A recent sale (1973) of 80 acres of land in nearby Gilbert Meadows indicates a value of \$625.00 per acre. This land has limited water and somewhat lesser scenic values than the Stateline vicinity. This land is now being offered for sale at \$1,000.00 per acre. Using a value of \$700.00 per acre for the 300 acres for Stateline Dam and Reservoir produces a value for the site of \$210,000.00. This land value should be entered into the Bureau's economic analysis of the Stateline project as no land is free, and this value should not be offered to the water developers as a subsidy to make this unit more attractive than another. Because of wildlife values it will be a recommendation to purchase lands for mitigation.

- J. Composite Evaluation of the Project Effects on Resource Values. The proposed Project can be made more acceptable and the adverse effects lessened by taking actions to enhance, mitigate, and offset resource impacts. Unless mitigated, wildlife habitat will be eliminated and a reservoir fishery will be substituted for a more desirable stream fishery. Esthetics will be degraded when drawdown exposes mudflats. All alternatives should be evaluated to minimize the project effects on resource values.

The environmental impacts on the Stateline area can be separated into three basic areas: (1) construction activity, (2) reservoir impoundment, and (3) operation and maintenance of the reservoir.

1. Construction Activity. To construct Stateline Dam and Di-ke, a total volume of 921,000 cubic yards of earthfill and rockfill would be required.

There is concern that part of the borrow areas for embankment material would be located outside of the reservoir basin and above high waterline, therein creating an unacceptable aesthetic impact.

Approximately 10,000 cubic yards of riprap would be required for protection of the spillway and outlet works. Preliminary Bureau of Reclamation studies indicate suitable material can be obtained from Gilbert Meadows.

Approximately 12,000 cubic yards of sand and gravel would be required as concrete aggregate in the dam construction. Sources for this material have been proposed (See Exhibit 10.) Stripping of topsoil, trees, and vegetation would be necessary. Water would be needed for washing operations and would need to be held for desilting before being returned to the stream. Following construction, the revegetation of the area would be necessary.

In order to gain access to the reservoir site from Mountain View, approximately 10 miles of unpaved county road and 6 miles of unpaved National Forest road must be traversed. The last $2\frac{1}{2}$ miles of National Forest road before reaching the damsite would require improvement to facilitate project construction and operation, and the entire 6 miles would require surfacing. Road gravel surfacing material locations have also been proposed. (See Exhibit 10.) Approximately 8,554 cubic yards of material would be required. Restoration of this site would also be necessary.

Biologists estimate the new access road will cause a direct loss of two additional acres of useable wildlife habitat. Indirect losses from reduced habitat along the strip of forest adjacent to the road would affect another 68 acres.

Timber cleared along this right-of-way, as well as within the reservoir site, would require disposal and cleanup.

During construction of the main access road public traffic to the Bridger Lake, Marsh Lake, China Meadows, and High Uintas Primitive Area would be disrupted. Recreational use and public traffic through the dam and reservoir site

would need to be restricted and controlled. A portion of this traffic could be routed via Gilbert Meadows. Stream fishing within the reservoir basin would be eliminated. Construction activity could result in unavoidable increase in the turbidity of the stream below the damsite.

2. Reservoir Impoundment. The second major impact would be the inundation of the Stateline meadow area by water. The land area to be inundated or removed from productivity by the dam, dike, and reservoir would amount to approximately 300 acres when the reservoir was completely full. At the top of active water surface, the elevation to which the reservoir would be cleared of vegetation, approximately 285 acres would be inundated.

Although there will be no reduction in permitted animal months, inundation of the Stateline site would result in 45 cow months of forage being removed from the East Fork Smiths Fork C & H Allotment. Additionally, about 450 moose days of forage would be lost.

Summer range for an undetermined number of deer and elk will be lost. Some habitat for beaver and other fur-bearing animals, upland game, and birds would be inundated.

Insertion of the man-made earthfill dam into the landscape would alter the existing natural setting of the area. Creation of the reservoir would change the character of the area from a meadow-stream to a lake type landscape. The most obvious detracting from the natural appearance of the locality would be the exposed mudflats during the peak recreation period on some years when the reservoir is drawn down.

About 1.8 miles of the East Fork of Smiths Fork in one of the better biologically productive reaches would be inundated. Because the fluctuating water levels would be lower in productivity, replacement of stream losses would be desirable.

3. Project Operation and Maintenance. Proposed operation of the Stateline Reservoir would have a drastic effect on downstream flows in the East Fork of Smiths Fork. Past peak spring runoff would be controlled. It is estimated that supplemental releases to the normal flow will be required from November through March. According to Bureau plans a minimum of 11 c.f.s. would be released from the reservoir. Studies have indicated that at least 12 c.f.s. should be delivered at the Robertson gauging

station as an acceptable minimum flow. The heaviest fishing pressure coincides with the irrigation season when reservoir releases would be at peak. Excess flows would degrade the stream hydrologically.

There is additional concern of the effects the salt contribution of return flows from supplemental irrigation upon the waters of Flaming Gorge Reservoir, as well as the incremental contribution of the Lyman Project to the overall salinity problem of the Colorado River. The Bureau of Reclamation should determine the effect of the return flows on the salinity of the Colorado River System.

VI. FOREST ADMINISTRATION AND PROTECTION

This part of the report describes the facilitating measures necessary to accomodate the change in resource management that will be brought about as a result of the proposed Stateline Dam of the Lyman Project. These requirements have been previously published in the Definite Plan Report by the Bureau of Reclamation in 1962. Although legislation and management policies and direction have been altered to a degree it is difficult to speculate how much change can be initiated at this late date.

A. Transportation System

1. Main Access Road. The Stateline Reservoir would flood 0.6 mile of an existing Forest Service road. Relocation and construction will be required. The Forest Service road from the Red Mountain junction to the north end of the new road would need to be reconstructed. In view of the need for a road standard suitable to handle the anticipated increase in public travel, to assure public safety and meet the construction needs, it is recommended that these roads be built to a 24-foot, gravel-surfaced width. The $3\frac{1}{2}$ -mile section between the National Forest Boundary and the Red Mountain Junction (between "A" and "B" on Exhibit 2) should be gravel surfaced as a project cost.

Gilbert Meadows contains a proposed "rip-rap" source. The Bureau proposes to use the Gilbert Creek road for hauling this material. Betterment and graveling should be a project cost.

2. Spur Roads. The type of road and standards for short temporary roads would vary in each individual case. Upon completion of the project, some of these roads would need to be closed.

The access leading to the concrete aggregate and road surface gravel borrow sources would only be required by the construction agency during the construction period. However, these access roads are located along permanent Forest Service system routes with desirable long-term usage.

- B. Communication Systems. The type of communications the Bureau of Reclamation will use if the Stateline Dam is constructed has not been determined at this date. Three alternatives are available. A radio-telephone system is available at the locally established Union Telephone Company in Mountain View,

Wyoming. A standard two-way radio communication system can also be used. Both systems should be more than adequate to meet construction needs, are reasonably priced, and would have little environmental impact. A standard telephone system could also be used, but would have more impact. Its benefits would be longer lasting, however, in that it could remain in service long after project completion.

Forest Service communication needs can be met by the existing radio communication system. An additional mobile radio would be needed by the fire prevention patrolmen. This should be project expense because of the increased fire hazard during construction of the proposed project.

- C. Administrative Sites and Improvements. The Stateline Project would not directly affect existing Forest Service administrative facilities. Anticipated project-induced increases in recreation use could dictate the need to upgrade existing facilities at some future date. Funding of these project-induced costs should be at project expense.
- D. Fire Prevention, Presuppression, and Suppression. Project-imposed costs for accelerated fire protection and control during the construction period are considered an integral part of project construction. The cost of this activity should be a project cost. (See Table 1 in Appendix).
- E. Withdrawals, Land Adjustments, Right-of-Way Procurements. All of the land within the proposed Stateline Reservoir area is National Forest land. The private land suggested for mitigation of wildlife habitat is recommended for transfer to the Forest Service. These lands are either within or immediately adjacent to the National Forest boundary and transfer to National Forest status would insure their dedication to the mitigation^{2/} of wildlife habitat. A water transmission system would cross State land if Pomavek Lakes are developed as a fisheries.

^{2/} Mitigation = replacement

VII. DIVERSITY OF OPINION

Opinions expressed by the various segments of society vary from total opposition to the Project to unqualified support. Public meetings have been held in Mountain View, Wyoming, and Salt Lake City, Utah.

A meeting was held in Mountain View on November 19, 1974. At this meeting there was no opposition expressed to the proposal. The rapid increase in population of the project area has caused an increased demand for municipal and industrial water for Bridger Valley. Completion of the project would in part satisfy these needs. A draft Environmental Statement will be available to the public in March or April, 1975. At that time, public meetings will be held and public opinion will be known.

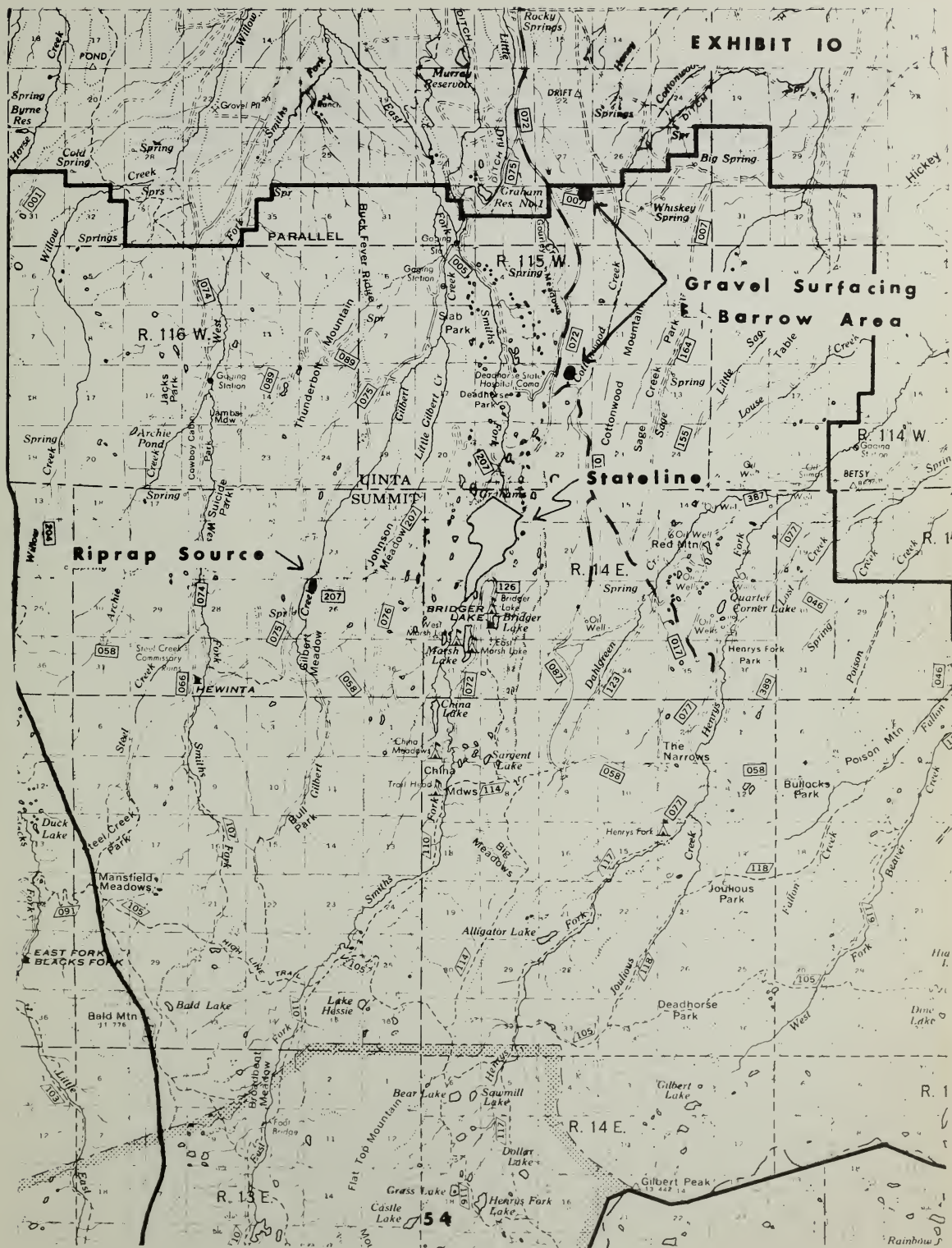
In light of the overall cooperative agreement between the Chief of the Forest Service and the Commissioner of the U. S. Bureau of Reclamation, the Forest Service has prepared this Impact Analysis of the Stateline Dam and Reservoir project of the U. S. Bureau of Reclamation. The Forest Service is extremely interested in minimizing environmental impacts, mitigating resource losses, and a complete intensive analysis of alternatives to the project.

VIII. RECOMMENDATIONS CONCERNING COORDINATION, MEMORANDUM OF UNDERSTANDING,
AND LIAISON

A Memorandum of Agreement between the U.S. Bureau of Reclamation and the U.S. Forest Service for the establishment of liaison and cooperation between both agencies during the construction of the Lyman Project, was consummated on October 15, 1971.

A copy is included in the Appendix.

A supplemental memo should be prepared for the location and construction of Stateline Reservoir and Dam and related appurtenances. This memo should cover such features as boat ramp road location, borrow areas, and recreation facilities.



IX. STATE AND PRIVATE FORESTRY CONSIDERATIONS

There are no State or private forested lands within the reservoir area. Private lands within or adjacent to the National Forest boundary would become involved if acquired for mitigation of wildlife habitat or if right-of-way acquisition becomes necessary.

X. CONCLUSIONS AND RECOMMENDATIONS

Construction of the Stateline Dam and Reservoir would have numerous impacts upon the resources and activities of the Wasatch National Forest as discussed in Part V of this report. There are many things that can be done to reduce these impacts and make the project more compatible with National Forest multiple use objectives. These are discussed in the following broad categories:

Outdoor Recreation

The Bureau of Reclamation should provide the recreation facilities needed to accommodate project induced public use, including water and waste disposal. Project plan is included in the appendix and costs are reflected in Table 2.

The Bureau of Reclamation should protect all areas above the high waterline to preserve and enhance aesthetic and recreation values.

Scenic Values

The reservoir would be enhanced by creating a varied and scenic shoreline. The Bureau of Reclamation should obtain the recommendations of Forest Service landscape architects to include in contracts before clearing work commences. Borrow should be confined only to areas that will be under water. All disturbed areas should be reseeded.

Range

The Bureau of Reclamation should plan to exclude livestock from the gravel and aggregate borrow areas by fencing them out until vegetation has become re-established. One mile of fence and one cattleguard will be needed near the south end of the reservoir to reduce cattle use in the developed recreation area. Cost is shown in Table 2.

Timber

The Bureau of Reclamation should include provisions in its contracts to require the contractor to dispose of all merchantable timber from road right-of-way and reservoir clearing and provide for removal and utilization.

Water and Soil

The Bureau of Reclamation should construct a series of debris basins immediately below the damsite to contain waste water from construction activities and aid in desilting and reduction of stream turbidity and sedimentation. These basins should be designed in consultation with a fisheries biologist and be able to withstand spring runoff.

If they were properly designed and located, perhaps they could persist and enhance the fish habitat of the stream.

The roads in the Stateline area should be designed to protect the watershed, accommodate the use impacts, provide adequate runoff, and prevent sedimentation.

Provisions should be included in the contract to reshape to a natural form the gravel and aggregate borrow areas, cover with topsoil, fence, and establish vegetation on the areas.

An important evaluation not yet completed is to determine the effects of return irrigation flows upon the salinity concentrations downstream.

The maximum allowable flow to prevent degradation to the stream channel is 400 c.f.s. sustained flows at the forest boundary. A maximum flow of 600 c.f.s. for 4 days may be tolerated. (See Noel Larson report in Appendix).

Wildlife and Fish

The Bureau of Reclamation and the Forest Service should work with the Utah Department of Natural Resources to provide the best possible fishery if the dam is constructed, and also, they both should work closely with the other concerned agencies to replace lost wildlife habitat through the purchase of private lands. The Bureau should provide replacement in kind on an acre for acre basis for lost wildlife habitat.

A fishery biologist should redesign the bottom configuration of the inundated area of Stateline after borrow operations are completed to enhance aquatic biomass production and utilization.

Construction of the Pomavek Lakes Fishery is proposed as partial mitigation of losses due to the overall Lyman Project. See project proposal in appendix. Cost is shown in Table 1.

Operating plans by the Bureau should provide during periods of low flow for release of 12 c.f.s. from the reservoir to maintain fisheries. The 12 c.f.s. should be measured at the Robertson gaging station located below the dam.

Special Uses

Water users holding water storage rights in Marsh Lake have agreed to the transfer of these storage rights to a new reservoir on the East Fork of Smiths Fork. Since Marsh Lake Dam needs reconstruction to maintain esthetics and insure public safety, the stabilized level should be at an elevation and adequate depth capable of supporting year-long fish life. This should be at project expense.

Lands

The Bureau of Reclamation should cooperate with the Forest Service on withdrawals for project and recreation purposes of suitable lands within the Stateline Complex. All land acquired for mitigating of wildlife habitat within the forest boundary should be transferred to public agency jurisdiction to insure their perpetuity for that purpose.

Transportation System

The Forest Service recommends that the Bureau of Reclamation improve 2½ miles of National Forest road below the reservoir to 24-foot surfaced width and gravel the entire 6 miles of road no. 80072 to meet the needs of construction activities and subsequent recreation use. The Gilbert Creek Road will be used as a haul road for riprap material and will require improvement and graveling on the entire 9 miles.

The Bureau should also design and construct roads to the concrete aggregate and gravel sources so that both can remain open and utilized for long-term resource management.

The Bureau of Reclamation should provide permanent bridges on the road crossing East Fork Smiths Fork for aggregate to avoid bank and bottom damage at the crossing site and sediment introduction into the stream.

Communications System

To avoid the environmental impact of a telephone line to its site, we recommend the use of a radio-telephone or two-way radio communication's system.

Fire

It will be necessary for the Forest Service to provide for project-imposed accelerated fire protection and control at project expense during the construction period.

The Bureau of Reclamation should include provisions in their contracts to dispose of nonmerchantable timber by burning, chipping, sales to local sawmills, or other means approved by the Forest Service. Burning of debris would be allowed by the Forest Service only under conditions prescribed by the State Air Pollution Commission.

Proposed Construction

To avoid sanitation problems and conflicts with the general public, The Forest Service will not permit contractor construction and worker camps on National Forest land. The Bureau of Reclamation should include this as a contract item.

The Bureau should obtain all borrow for embankment material from within the reservoir high waterline and remove borrow material in the vicinity of the car-top boat launching road to the shape required for boat launching and parking.

XI. SUMMARY

The Bureau of Reclamation proposes the construction of Stateline Dam, one of eleven alternatives under consideration for completion of the Lyman Project. A reservoir at this site will be entirely on the National Forest and will effect approximately 300 acres of land and about 6 miles of free running stream within the Wasatch National Forest boundary. Environmental impact of this proposal will result in only slight commodity losses to the timber and grazing resources. Major impacts to esthetics, wildlife habitat, and water quality will occur. An increase in recreational use and better utilization of water are expected from project development.

Adverse environmental effects that cannot be avoided should this proposal be implemented are the loss of wildlife habitat and transformation of stream fishery to a reservoir fishery, loss of esthetics due to exposed mud flats in some years and development of an artificial facility in a natural landscape, and additional effluent and sediment resulting from construction activity and increased use by the public.

Alternatives to this proposal are: China Meadows Damsite*, Dead Horse Damsite*, Perry Ranch Damsite, Dead Horse*, and Perry Ranch Damsites in Combination, East Fork Section 30 Damsite*, Bridger Damsite, China Lake Enlargement*, Bridger and China Lake* in combination, Bridger and Dead Horse* Damsites in combination, and Gilbert Meadows Damsite*. A thorough analysis by the Forest Service of the remaining eight alternatives occurring on National Forest land has not been completed. Those alternatives occurring on National Forest land are indicated above by an *. One additional alternative presently not under consideration by the Bureau of Reclamation is the transfer of water rights and diversion of unallotted water in Meeks Cabin Reservoir.

Construction of this facility will result in the long term use of the environment with more efficient local use of water and increased hay production. Once Stateline Dam is constructed, this will be an irreversable commitment of these lands to water storage resulting in the loss of existing wildlife and fisheries habitat, esthetics, and water quality. These losses will affect State and private lands since replacement to public ownership can only come from the private sector and a transmission system would cross State owned properties.

If Stateline is constructed, the following actions are essential to protect and enhance environmental quality:

1. During low flow, it is essential that sufficient water be released from Stateline Reservoir to measure at least 12 c.f.s. at the Robertson Gaging Station to maintain the aquatic ecosystem in the East Fork Smiths Fork.

2. During peak flow, it is essential that releases don't exceed 600 c.f.s. for more than a four day period or 400 c.f.s. for sustained periods to maintain the stability of the East Fork Smiths Fork stream channel.
3. To maintain esthetic and recreation values during peak use periods, rate of draw down should be coordinated on both Lyman Project facilities to minimize exposed mud flats during the July and August recreational use period.
4. In order to maintain the value of existing recreation facilities and provide for public safety in the transfer of storage rights of Marsh Lake to Stateline, the dam at Marsh Lake should be reconstructed and Marsh Lake stabilized at its existing highest level or at an elevation and adequate depth capable of supporting yearlong fish life.
5. In order to help replace the loss of the inundated stream fishery, an adequate conservation pool should be provided in Stateline Reservoir to insure the reservoir's management as a fishery.
6. In order to off-set due loss of fish habitat effected by increased downstream flows during the peak fishing periods and decrease flows during critical winter periods, a transmission system should be developed to provide live water to Pomavek Lakes.
7. To maintain environmental quality during the construction period, debris and catchment basins should be constructed immediately below the dam and around construction equipment that contributes sediment to the stream. Also, total containment of all petroleum waste from machinery, garbage from construction activity, and human effluent should be required. In order to insure environmental quality, the East Fork Smiths Fork should be monitored regularly as a project cost during the constructing period.
8. To minimize sanitation problems and conflicts with forest visitors during the construction period, construction contracts should provide a no camping clause within the National Forest.
9. To accomodate the increased recreation use that will be attracted by a reservoir, adequate recreation and sewage treatment facilities should be constructed as a project cost. These facilities should be provided concurrently with construction of the project.
10. Since irrigation return flows re-enter National Forest system lands at the Flaming Gorge National Recreation Area, the Bureau of Reclamation should determine the overall effect to salinity in Flaming Gorge Reservoir.

11. Since bottom configuration of the inundated area determines its productivity, Bureau of Reclamation personnel should work with biologist of the Forest Service and Utah Division of Wildlife Resources to design and reshape the reservoir bottom during the construction process.
12. A fence and cattle guard should be constructed at the south end of the reservoir to minimize cattle use with the proposed recreation area.
13. Land occupied by the proposed project will be lost as habitat for wildlife, both game and non-game; this habitat on an acre for acre basis should be re-purchased from private ownership and returned to public ownership for management for this purpose.
14. To avoid long term periods for re-invasion of plants and the visual impact of disturbed soils, the Bureau of Reclamation should provide for re-occupation of plants to disturbed sites by reshaping and reseeding these areas. In those areas where livestock use will prevent immediate re-establishment of adequate plant cover, fencing will be required.
15. The reservoir would be enhanced by creating a varied and scenic shoreline. The Bureau of Reclamation should obtain the assistance of Forest Service landscape architects to design the cleared area.
16. The Bureau of Reclamation should include provisions in its contracts to require the contractor to dispose of all merchantable timber from road right-of-way and reservoir clearing and provide for removal and utilization.
17. To minimize the effect on those lands other than project occupied, the Bureau of Reclamation should obtain all borrow material from within the reservoir high water line.
18. Adequate signing, flagging, or rerouting of traffic will be required by the Bureau of Reclamation to provide for public safety.
19. Forest Service will provide accelerated fire protection and control at project expense during the construction period.
20. To avoid the impact of a telephone line to the construction site, radio-telephone or two-way radio should be the means of communication.

XII. APPENDIX

- A. Tabulation of Grass, Plants, Shrubs, and Trees Common to the Project Area.
- B. List of Birds and Animals Common to the Project Area.
- C. Memorandum of Agreement for the Establishment of Liaison and Cooperation Between Both Agencies During Construction of the Lyman Project.
- D. Stabilization of Marsh Lake.
- E. Stabilization of Pomavek Lakes.
- F. Noel Larson Report.
- G. Recreation Cost Estimates.

TABULATION OF GRASSES, PLANTS, SHRUBS, AND TREES
COMMON TO THE PROJECT AREA

Lyman Project

Scientific Binomial

Common Name

Grasses

Agropyron dasystachyum	Thickspike wheatgrass
Agropyron smithii	Western wheatgrass
Agropyron apicatum	Bluebunch wheatgrass
Agropyron cristatum	Crested wheatgrass
Agrostis humilis	Pygmy redtop
Bromus inermis	Smooth brome
Bromus marginatus	Mountain brome
Bromus tectorum	Cheatgrass
Elymus cinereus	Great Basin wildrye
Elymus canadensis	Canada wildrye
Festuca spp.	Fescue
Hesperochloa kingii	Spike fescue
Hilaria jamesii	Galleta
Hordeum spp.	Barley
Koeleria cristata	Junegrass
Oryzopsis hymenoides	Indian ricegrass
Phleum alpinum	Alpine timothy
Phleum pratense	Timothy
Poa spp.	Bluegrass
Poa compressa	Canada bluegrass
Poa fendleriana	Muttongrass
Poa pratensis	Kentucky bluegrass
Poa secunda	Sandbert bluegrass
Sitanion hystrix	Squirreltail
Sporobolus airoides	Alkali sacaton
Sporobolus cryptandrus	Sand dropseed
Stipa comata	Needle-and-thread
Stipa lettermanii	Letterman needlegrass
Stipa thurberiana	Thurber needlegrass

Grasslike Plants

Carex douglasii	Sedge
Equisetum spp.	Horsetail
Cyperus microcarpus	Bullrush

Forbs

Achillea lanulosa	Western yarrow
Agoseris glauca	Smooth mountain-dandelion
Allium spp.	Onion
Antennaria spp.	Pussytoes

Scientific Binomial

Ambrosia spp.
Aquilegia spp.
Asclepias speciosa
Aster spp.
Astragalus spp.
Asclepias spp.
Balsamorhiza spp.
Balsamorhiza sagittata
Cardaria draba
Castilleja spp.
Calochortus naltalli
Chaenactis douglasii
Chenopodium spp.
Chenopodium album
Cirsium spp.
Cirsium vulgare
Collinsia spp.
Cleome spp.
Cleome serrulata
Cryptantha spp.
Delphinium spp.
Dodecatheon spp.
Eriogonum spp.
Eriogonum ovaliflorum
Eriogonum wrightii
Fragaria spp.
Fragaria glauca
Geranium spp.
Gilia spp.
Hackelia spp.
Halogeton glomeratus
Helianthus spp.
Hydrophyllum spp.
Iris spp.
Iva axillaris
Linum spp.
Linum lewisii
Lupinus spp.
Melilotus officinalis
Penstemon spp.
Phlox spp.
Plantago lanceolata
Polygonum spp.
Potentilla spp.
Ranunculus spp.
Rudbeckia spp.
Rumex spp.
Salsola Kali tenuifolia
Senecio spp.

Common Name

Ragweed
Columbine
Showy milkweed
Aster
Loco
Milkweed
Balsamroot
Arrowleaf balsamroot
Whitetoop (hoary cress)
Paintbrush
Segolily
False yarrow
Goosefoot
Lambsquarters
Thistle
Bull thistle
Blue-eyed Mary
Beeplant
Rocky Mountain beeplant
Cryptantha
Larkspur
Shooting star
Wild buckwheat
Wild buckwheat
Wild buckwheat
Strawberry
Strawberry
Geranium
Skyrocket
False Forget-me-not
Halogeton
Sunflower
Waterleaf
Iris
Povertyweed
Blue flax
Blue flax
Lupine
Yellow sweetclover
Penstemon
Phlox
Plantain
Knotweed
Cinquefoil
Buttercup
Niggerhead
Dock
Russian thistle
Groundsel

Scientific Binomial

Solidago spp.
 Sphaeralcea coccinea
 Taraxacum officinale
 Vicia spp.
 Viola spp.
 Wyethia spp.
 Zigadenus spp.

Common Name

Goldenrod
 Scarlet globemallow
 Dandelion
 American vetch
 Violet
 Mules ears
 Deathcamas

Shrubs

Amelanchier alnifolia
 Arctostaphylos spp.
 Arctostaphylos uva-ursi
 Artemisia arbuscula
 Artemisia frigida
 Artemisia nova
 Artemisia spinescens
 Artemisia tridentata
 Aster spp.
 Atriplex canescens
 Atriplex confertifolia
 Atriplex nuttallii
 Berberis repens
 Ceanothus spp.
 Cercocarpus montanus
 Cercocarpus ledifolius
 Chrysothamnus nauseosus
 Eurotia lanata
 Grayia spinosa
 Kochia americana
 Opuntia spp.
 Potentilla fruticosa
 Purshia tridentata
 Ribes spp.
 Rosa spp.
 Rosa woodsii
 Rhus trilobata
 Salix spp.
 Sarcobatus vermiculatus
 Symphoricarpos spp.
 Tamarix spp.
 Tetradymia spp.

Common serviceberry
 Manzanita
 Bearberry
 Low sagebrush
 Fringed sagebrush
 Black sagebrush
 Bud sagebrush
 Big sagebrush
 Aster
 Fourwing saltbrush
 Shadscale
 Nuttall saltbrush
 Oregon grape
 Snowbrush
 Mountain mahogany
 Curleat mountain mahogany
 Rubber rabbitbrush
 Winterfat (White sage)
 Spiny hopsage
 Green molly
 Prickly pear
 Bush cinquefoil
 Antelope bitterbrush
 Currant
 Rose
 Woods rose
 Skunkbush (squawbush)
 Willow
 Greasewood
 Snowberry
 Salt-cedar
 Horsebrush

Trees

Abies spp.
 Betula spp.
 Juniperus osteosperma
 Pinus spp.
 Populus tremuloides
 Populus angustifolia
 Prunus spp.
 Pseudotsuga menziesii

Fir
 Red Birch
 Utah juniper
 Pine
 Quaking aspen
 Narrowleaf cottonwood
 Chokecherry
 Douglas fir

LIST OF BIRDS AND ANIMALS
COMMON TO THE PROJECT AREA (1)
Lyman Project

<u>Common Name</u>	<u>Scientific Name</u>	<u>Effect of Proposed Action (2)</u>
Herons & Bitterns	Ardeidae	.
Great Blue Heron	Ardea herodias	3
Black-crowned Night Heron	Mycticorax	3
American Bittern	Botaurus lentiginosus	3
Geese and Ducks	Anatidae	
River & Pond Ducks	Anatinae	
Mallard	Anas platyrhyncho	1 (nesting) 3 (transients)
Wood Duck	Aix sponsa	1-3
Pintail	Anas acuta	1-3
Green-winged Teal	Anas carolinensis	1-3
Cinnamon Teal	Anas cyanoptera	1-3
Blue-winged Teal	Anas discors	1-3
American Widgeon (Baldpate)	Mareca americana	1-3
Shoveler	Spatula clypeata	1-3
Diving Ducks	Nyrocinæ	
Lesser Scaup	Aythya affinis	1-3
Redhead	Aythya americana	1-3
Ring-necked Duck	Aythya collaris	1-3
Buffle-head	Bucephala albeola	1-3
Common Golden-eye	Bucephala clangula	1-3
Mergansers	Merginae	
Common Merganser	Mergus merganser	1-3
Red-breasted Merganser	Mergus serrator	1-3
Ruddy Ducks	Oxyurinae	
Ruddy Duck	Oxyura jamaicensis	1-3
Hawks and Harries	Accipitridae	
Goshawk	Accipiter gentilis	2
Sharp-shinned Hawk	Accipiter striatus	2

(1) Based on North Slope Species List prepared in office of Wasatch National Forest, U.S. Forest Service.

(2) 1 - Eliminate, 2 - Displace, 3 - Increase, 4 - No affect

<u>Common Name</u>	<u>Scientific Name</u>	<u>Effect of Proposed Action (2)</u>
Hawks and Harries (continued)		
Red-tailed Hawk	Buteo jamaicensis	2
Marsh Hawk	Circus cyaneus	2
Cooper's Hawk	Accipiter cooperii	2
Swainson's Hawk	Buteo Swaisoni	2
Caracaras and Falcons		
Pigeon Hawk	Falco columbarits	2
Sparrow Hawk	Falco sparverius	2
Ospreys		
Ospreys	Pandion haliaetus	3
Grouse and Ptarmigans		
Ruffed Grouse	Bonasa umbellus	2
Plovers		
Killdeer	Charadriidae	3
	Charadriidae vociferus	
Snipe, Sandpipers	Scolopacidae	
Spotted Sandpiper	Actitis macularia	3
Solitary Sandpiper	Tringa solitaria	3
Wilson's Snipe	Capella gallinago	2
Western Willet	Catoptrophorus semipalmatus	2
Baird's Sandpiper	Erolia bairdii	3
Least Sandpiper	Erolia minutilla	3
Semipalmated Sandpiper	Ereunetes pusillus	3
Western Sandpiper	Ereunetes mauri	3
Avocets and Stilts		
Avocet	Recurvirostridae	
	Recurvirostra americana	3
Black-necked Stilt	Himantopus mexicanus	3
Gulls and Terns		
California Gull	Laridae	
	Larus californicus	3
Franklin's Gull	Larus pipixcan	3
Owls		
	Tytonidae (Barn Owls) and Strigidae	
Screech Owl	Otus asio	2
Great Horned Owl	Bubo virginianus	2
Long-eared Owl	Asio otus	2

<u>Common Name</u>	<u>Scientific Name</u>	<u>Effect of Proposed Action (2)</u>
Hummingbirds	Trochilidae	
Broad-tailed	Selasphorus platycercus	2
Black-chinned	Archilochus alexandri	2
Kingfishers	Alcedinidae	
Belted Kingfisher	Megaceryle alcyon	3
Woodpeckers	Picidae	
Red-shafted Flicker	Colaptes cafer	2
Pileated Woodpecker	Hylatomus pileatus (dryocopus)	2
Hairy Woodpecker	Dendrocopos villosus	2
Three-toed Woodpecker	Picoides tridactylus	2
Yellow-bellied Sapsucker	Sphyrapicus varius	2
Williamson's Sapsucker	Sphyrapicus thyroideus	2
Downy Woodpecker	Dendrocopos pubescens	2
Larks	Alandidae	
Horned Lark	Fremophila alpestris	3
Swallows	Hirundinidae	
Violet-green Swallow	Tachycineta thalassina	2
Purple Martin	Progne subis	2
Jays, Magpies, and Nutcrackers	Corvidae	
Canada Jay (Gray)	Perisoreus canadensis	3
Clark's Nutcracker	Nucifraga columbiana	2
Steller's Jay	Cyanocitta stelleri	2
Chickadee, Titmice, etc.	Paridae	
Mountain Chickadee	Parus gambeli	2
Black-capped Chickadee	Parus atricapillus	2
Nuthatches	Sittidae	
Red-breasted Nuthatches	Sitta canadensis	2
White-breasted Nuthatches	Sitta carolinensis	2

<u>Common Name</u>	<u>Scientific Name</u>	<u>Effect of Proposed Action (2)</u>
Creepers	Certhidae	
Brown Creeper	Certhia familiaris	2
Dipper	Cinclidae	
Water Ouzel	Cinclus mexicanus	2
Wrens	Troglodytidae	
Rock Wren	Salpinctes obsoletus	2
House Wren	Troglodytes aedon	2
Bewick's Wren	Thryomanes	2
Long-billed Marsh Wren	Telmatodytes palustris	2
Thrushes	Turdidae	
Robin	Turdus migratorius	2
Hermit Thrush	Hylocichla guttata	2
Olive-backed Thrush	Hylocichla ustulata	2
Mountain Bluebird	Sialia currucoides	2
Western Bluebird	Sialia mexicana	2
Townsend's Solitaire	Myadestes townsendi	2
Kinglets	Sylviidae	
Ruby-crowned Kinglet	Regulus calendula	2
Vireos	Vireonidae	
Solitary Vireo	Vireo solitarius	2
Warbling Vireo	Vireo gilvus	2
Wood Warblers	Parulidae	
Orange-crowned Warbler	Vermivora celata	2
Audubon's Warbler	Dendroica auduboni	2
Townsend's Warbler	Dendroica townsendi	2
Yellow Warbler	Dendroica petechia	2
Yellowthroat	Geothlypis trichas	2
Yellow-breasted Chat	Icteria virens	2
Wilson's Warbler	Wilsonia pusilla	2
Blackbirds, Meadow Larks, and Allies	Icteridae	
Meadow Lark	Sturnella neglecta	2
Red-winged Blackbird	Agelaius phoeniceus	2
Tanagers	Thraupidae	
Western Tanager	Piranga ludoviciana	2

<u>Common Name</u>	<u>Scientific Name</u>	<u>Effect of Proposed Action (2)</u>
Grosbeaks, Finches, Sparrows, and Buntings	Fringillidae	
Cassin's Purple Finch	Carpodacus cassinii	2
Pine Grosbeak	Pinicola enucleator	2
Pine Siskin	Spinus pinus	2
Red Crossbill	Loxia curvirostra	2
Gray-headed Junco	Junco caniceps	2
Chipping Sparrow	Spizella passerina	2
White-crowned Sparrow	Zonotrichia leucophrys	2
Lincoln's Sparrow	Melospiza lincolnii	2
Lazuli Bunting	Passerina amoena	2
Evening Grosbeak	Hesperiphona vespertina	2
House Finch	Carpodacus mexicanus	2
Goldfinch	Spinus tristis	2
Rufous-sided Towhee	Pipilo erythrophthalmus	2
Slate-colored Junco	Junco hyemalis	2
Oregon Junco	Junco oreganus	2
Song Sparrow	Melospiza melodia	2
Insectivores	Insectivora	
Shrews	Soricidae	
Masked Shrew	Sorex cinereus	1
Vagrant Shrew	Sorex vagrans	1
Water Shrew	Sorex palustris	1
Bats	Chiroptera	
Plainnose Bats	Myotis	
Long-eared Myotis	Myotis evotis	2
Little Brown Myotis	Myotis lucifugus	2
Long-legged Myotis	Myotis volans	2
Silver-haired Bat	Lasionycteris noctivagans	2
Big Brown Bat	Eptesicus fuscus	2
Rodents	Rodentia	
Squirrels and Allies	Sciuridae	
Least Chipmunk	Eutamias minimus	1
Uinta Chipmunk	Eutamias umbrinus	1
Yellow-bellied Marmot	Marmota flaviventris	1
Richardson Ground Squirrel	Citellus richardsoni	1
Uinta Ground Squirrel	Citellus armatus	1
Golden-mantled Ground Squirrel	Citellus lateralis	1
Red Squirrel	Tamiasciurus	1
Northern Flying Squirrel	Glancomys sabrinus	1

<u>Common Name</u>	<u>Scientific Name</u>	<u>Effect of Proposed Action (2)</u>
Rodents (continued)		
Pocket Gophers	Geomyidae	
Northern Pocket Gopher	Thomomys talpoides	1
Beaver	Castoridae	
Beaver	Castor canadensis	2
Native Rats and Mice	Cricetidae	
Deer Mouse	Peromyscus maniculatus	1
Brushytail Wood Rat	Neotoma cinerea	1
Boreal Redback Vole	Clethrionomys gapperi	1
Heather Vole	Phenacomys intermedius	1
Mountain Vole	Microthus montanus	1
Long-tailed Vole	Microtus longicaudus	1
Water Vole	Microtus richardsoni	1
Sagebrush Vole	Lagurus curtatus	1
Muskrat	Ondatra zibethica	2
Jumping Mice	Zapodidae	
Western Jumping Mouse	Zapus princeps	1
Porcupines	Erethizontidae	
Porcupine	Erethizon dorsatum	1
Hares, Rabbits, and Pikas		
Hares and Rabbits	Lagomorpha	
Snowshoe Hare	Leporidae	
Whitetail Jack Rabbit	Lepus americanus	1
Black-tailed Jack Rabbit	Lepus townsendi	2
	Lepus californicus	2
Carnivores		
Coyotes, Wolves, and Foxes	Carnivora	
Coyote	Canidae	
Red Fox	Canis latrans	2
	Vulpes fulva	2
Bears	Ursidae	
Black Bear	Ursus americanus	2
Weasels, Skunks, and Allies	Mustelidae	
Martin	Martes americana	2
Fisher	Martes pennant	2
Long-tailed Weasel	Mustela frenata	2
Mink	Mustela vison	2
Badger	Taxidea taxus	2
Western Spotted Skunk	spilogale putorius	2
River Otter	Lutra canadensis	2
Striped Skunk	Mephitis mephitis	2
Ermine	Mestela erminea	2

<u>Common Name</u>	<u>Scientific Name</u>	<u>Effect of Proposed Action (2)</u>
Carnivores (continued)		
Cats	Felidae	
Canada Lynx	Lynx canadensis	2
Bob Cat	Lynx rufus	2
Even-toed Hoofed Animals	Artiodactyla	
Elk, Deer, and Allies	Cervidae	
American Elk	Cervus canadensis	2
Mule Deer	Odocoileus hemionus	2
Moose	Alces alces	2
Old World Rats and Mice	Muridae	
House Mouse	Mus musculus	3
Amphibians	Amphibia	
Tiger Salamander	Ambystoma tigrinum	1
Reptiles	Reptilia	
Tree Lizard	Urosaurus ornatus	1
Western Yellow- bellied Racer	Coluber constrictor	2
Great Basin Gopher Snake	Pituophis melanoleucus	2
Wandering Garter Snake	Thamnophis elegans	2

MEMORANDUM OF AGREEMENT
BETWEEN
THE U. S. BUREAU OF RECLAMATION, DEPARTMENT OF INTERIOR
AND
THE U. S. FOREST SERVICE, DEPARTMENT OF AGRICULTURE
FOR
THE ESTABLISHMENT OF LIAISON AND COOPERATION BETWEEN BOTH
AGENCIES DURING CONSTRUCTION OF THE LYMAN PROJECT

This Memorandum of Agreement, made and entered into this 15th
day of October, 1971, by and between the Bureau of Reclamation,
United States Department of Interior, hereinafter referred to as
Reclamation, represented by the Regional Director, Region 4, Salt Lake
City, Utah, acting pursuant to the Act of June 17, 1902 (32 Stat. 388,
43 U.S.C. 391 et seq.), and acts amendatory thereof or supplemental
thereto, in particular, the Colorado River Storage Project Act of
April 11, 1956 (70 Stat. 105), more specifically to section 7(c) of the
Act of July 9, 1965 (79 Stat. 213), and the Forest Service, U.S. Depart-
ment of Agriculture, hereinafter referred to as the Service, acting
pursuant to the Act of June 4, 1897 (30 Stat. 34), Act of June 30, 1932
(31 U.S.C. 686), and the Act of June 12, 1960 (74 Stat. 215), represented
by the Regional Forester, Intermountain Region, Ogden, Utah.

Explanatory Statement

The Secretary of the Interior is authorized, in the Act of April 11,
1956 (70 Stat. 105), to construct, operate, and maintain the Lyman Project,
hereinafter referred to as the project, as a participating project of
the Upper Colorado River Storage Project.

This project will occupy, among others, lands administered by the Service within the Wasatch National Forest. These National Forest lands are established, and administered, for outdoor recreation, range, timber, watershed, and wildlife and fish purposes, under principles of multiple use management.

Portions of the National Forest lands administered by the Service have been withdrawn for project construction and operation.

Certain non-National Forest lands were withdrawn or acquired by Reclamation for project purposes, which lands were transferred to the Service on October 5, 1967, for administration pursuant to provision of the Act of July 9, 1965 (79 Stat. 213).

Project construction will of necessity have a major effect upon the lands involved, and in some instances be in direct conflict with established uses and recognized present land resource values. Project construction on lands protected and administered by the Service will create a need for additional improvements and protective services, both during and following construction. Portions of the replacement of these facilities and additional improvements and services will be provided by Reclamation and portions by the Service.

Reclamation and the Service recognize that good public land management requires that all of the resources of project lands be managed for multiple use purposes, and be made available for the use and enjoyment of the general public. Therefore, in accordance with sound engineering and conservation practices, Reclamation and the Service agree as follows:

Designation of Representatives of Reclamation and Service

Reclamation and Service will cooperate fully in all matters relating to use of National Forest lands for project purposes. The Regional Director hereby designates the Project Construction Engineer, Mountain View, Wyoming, or his authorized representative to represent Reclamation, and the Regional Forester hereby designates the Forest Supervisor of the Wasatch National Forest or his authorized representative, to represent the Service in the administration of this Memorandum of Understanding. The Forest Supervisor and the Project Construction Engineer, or their designated field representatives, will cooperate in providing optimum conservation of lands and resources during construction of the project.

The Forest Supervisor and the Construction Engineer may enter into necessary agreements for location and construction of minor appurtenances to authorized project features; location, use, and treatment of construction materials sources; location and design of access and service roads; control of the public; and other items related to accomplishment of the primary project purpose. Items of major significance, divergent interest or unresolvable disputes will be referred to the Regional Director and the Regional Forester for reconciliation.

A. Reclamation will:

1. Cooperate with the Service in all matters relating to the utilization of National Forest lands, under the terms of this agreement and subsequent agreements.
2. Contact the Service's designated liaison representative prior to use or development of National Forest lands.

3. Inform the Service of its construction schedule, through the designated liaison representative.
4. Furnish the Regional Forester, the Forest Supervisor, and the designated Service liaison representative with copies of specifications when issued to bidders for work within the project area for the purpose of determining their effect.
5. Review Service specifications for work within the Reclamation withdrawal area, and will advise the Service in writing, within fifteen (15) days after receipt of the specifications, of its concurrence or any changes considered desirable or necessary.

B. The Service will:

1. Cooperate fully with Reclamation in all matters pertaining to the use and administration of National Forest lands.
2. Review Reclamation specifications issued to bidders for project work, and will advise Reclamation in writing, within fifteen (15) days after receipt of the specifications, of its concurrence or any changes considered desirable or necessary.
3. Provide Reclamation's Project Construction Engineer with Forest Service regulations, as needed, pertaining to use and protection of project lands and occupancy of National Forest lands.
4. Identify lands needed for recreation and other uses within the project area, and where necessary for the protection of these sites, will clearly mark and identify such areas on the ground and will inform Reclamation of the protective measures needed to properly protect these sites.

5. Upon issuance of any specifications by the Service for work within the Reclamation withdrawal area, furnish a copy to Reclamation for review. Such review will be for the purpose of ensuring there is no conflict with Reclamation construction activities or project purposes.

C. The Service and Reclamation mutually agree that:

1. This Memorandum may be amended, modified, or supplemented upon mutual agreement between the parties hereto.

2. This Memorandum shall remain in force until terminated by mutual consent of the parties hereto. It is anticipated that this termination will occur upon completion of construction of the project facilities, and upon execution of operating agreements for various project features.

3. The performance of any obligations for the expenditure of any funds under this Memorandum and subsequent memoranda is made contingent on the Congress making the necessary appropriation therefor.

In witness whereof the parties hereto have signed this Memorandum as of the day and year first above written.

UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

By 
Regional Director, Region 4

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE

By Vern Hamre
Regional Forester, Intermountain Region

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
Wasatch NF

REPLY TO: 7500 Water Developments
(2540)

January 28, 1975

SUBJECT: Stabilization of Marsh Lake



TO: Alfred W. Walker, Chief, Range, Water,
and Wildlife Branch

An update of the July 14, 1967 cost estimate to stabilize Marsh Lake has been made. The updated costs reflect inflation.

1. Estimate of Cost to Stabilize at Existing Level:

Cleanup Debris	\$2,000
Concrete to Plug Outlet Pipe and to Line Spillway 40'x15' 30 Cu. Yds. @ \$250/cu. yd.	7,500
Excavation Along Spillway 25 Cu. Yds @ \$60/cu. yd.	1,500
Rock Riprap on Face of Dam 100 Cu. Yds. @ \$25 cu. yd.	<u>2,500</u>
Subtotal	13,500
Engineering Design	1,350
Construction Supervision	2,025
Forest Overhead	<u>5,625</u>
TOTAL PROJECT COST	\$22,500

2. Estimates of Cost to Raise Dam Five Feet

Cleanup Debris	\$2,000
Clearing 5 acres @ \$2,500/acre	12,500
Excavation 1300 cu. yds @ \$12/cu. yd.	15,600
Embankment 2800 cu. yds. @ \$2.50/cu. yd.	7,000
Rock Riprap 450 cu. yds. @ \$25/cu. yd.	11,250
Concrete 50 cu. yds. @ \$250/cu. yd.	<u>12,500</u>
Subtotal	\$60,850
Engineering Design	6,085
Construction Supervision	9,128
Forest Overhead	<u>25,354</u>
TOTAL PROJECT COST	\$101,417

FORN W. NIELSEN

JOHN W. NIELSEN
Forest Engineercc: Engineering
Kimbal
D-5 ✓

CHGreene:nht

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
Wasatch N. F.

REPLY TO: 7500 Water Developments
(2540)

January 22, 1975

SUBJECT: Stabilization Of Pomaveck Lakes



TO: Alfred W. Walker, Chief, Range, Water,
and Wildlife Branch

A review and update of the November 20, 1969, cost estimate of the Pomaveck Lakes Project has been made. The updated costs are submitted to reflect the costs for the upstream pipeline route that would create less of an impact on the resources. This estimate is based on present prices and costs and must be updated again if construction is delayed more than one year.

It is recommended that financing for this project be made at the Forest (or State) level, otherwise increased Forest Service overhead costs must be applied.

If you have any further questions, please contact this office.

A handwritten signature in cursive script, reading "John W. Nielsen", is written over the typed name.

JOHN W. NIELSEN
Forest Engineer

Attachment

POMAVEK LAKES PROJECT:

Summary of Estimated Costs

<u>Item</u>	<u>Unit Cost</u>	<u>Quantity</u>	<u>Total Cost</u>
1. Diversion Structure	\$12,500.00	1	\$12,500.00
2. Main Pipe Line			
a. Pipe, Trenching, Bedding, and Clearing (10 inch concrete pipe supplying 2 cubic feet per second	\$10.00/ft.	13,000	130,000.00
b. Appurtenances	12,400.00	Lump Sum	12,400.00
3. Earthwork and Clearing	26,535.00	Lump Sum	26,535.00
4. Secondary Pipelines	13,944.00	Lump Sum	13,944.00
5. Structures and Controls	11,900.00	Lump Sum	<u>11,900.00</u>
Total Construction Cost			207,279.00
Construction Engineering			25,090.00
Design Engineering			20,728.00
S. O. Overhead			<u>36,797.00</u>
Total Project Cost			\$289,894.00

UNITED STATES GOVERNMENT

Memorandum

RECEIVED
Department of Agriculture — Forest Service
WASATCH NATIONAL FOREST

WASATCH NATIONAL FOREST
4438 FED. BLDG., 125 S. STATE
SALT LAKE CITY, UTAH 84111

SEP 1 1967

TO : Files

MOUNTAIN VIEW RANGER DISTRICT
MOUNTAIN VIEW, WYOMING

File No. 2510

FROM : Noel D. Larson

Date: July 12, 1967

SUBJECT: Watershed Surveys and Plans - Lyman Project

Your reference:

Enclosed are the results of some data I have worked up from records on the East Fork of Smith's Fork.

I can now make some comments and recommendations concerning maximum discharge from the proposed reservoir at China Meadows, down the E.F.S.F. to the Forest boundary.

First, however, I assume that when they are talking about a certain maximum discharge that it is that flow passing the gaging station near the boundary and not a certain maximum discharge that will occur in addition to the normal flow present in the channel at that time of the year. This is, at least, what I mean by a maximum discharge or flow down the E.F.S.F.

Because I do not have a key for the U.S.G.S. gaging house, I quickly gaged the stream at that site and below China Meadows to obtain an estimate of the present channel discharge. I then walked the stream from China Meadows to the gaging station to determine the channel condition and how much of an increase in the present stage could be allowed without resulting in abnormal damage to the stream channel.

An increase in the present stage by one foot or to 5.9 feet would result in a discharge of 600 cfs which could be tolerated for only a short period of time (less than a week). A stage of 5.5 feet or 400 cfs could be tolerated over a sustained period without excessive damage to the stream channel. An exception to this would be, of course, an anomaly in the weather where we have an event such as that in Sheep Creek Canyon. Generally, however, the reservoir should improve both the channel and the fisheries condition by lowering the peak and lengthening the period of greater flow.

As I mentioned, a fisheries biologist should determine an acceptable sustained minimum flow. Certainly such a stipulation should be made.

I have also examined the China Lake, Marsh Lake, and Bridger Lake drainages. These and all other small drainages entering E.F.S.F. have a very definite critical maximum discharge that is not very great. We can discuss this later if need be.

You will note some discrepancy in the results obtained by the two methods for computing a return period. This is not atypical. There is a third theoretical method I may try some time when I have time.

You will also notice that there is very little difference in flow between China Meadows and the gaging station at this time of year.

As I understand, I will be in Salt Lake City on Tuesday the 18th for the PSW meeting.

Enclosure

cc: given to Kimbal and Howard Metsker on 7/31/67

Noel D. Larson

Estimated Runoff of East Fork of Smiths Fork at Stateline Damsite

Unit - 1000 ac-ft.

Yr. end	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Total
1930	1.2	1.0	0.7	.6	.6	.6	2.0	9.1	12.0	4.4	3.4	1.8	37.4
31	1.1	.8	.7	.5	.4	.5	.7	4.4	4.3	1.4	1.0	.5	16.3
32	.7	.6	.5	.4	.5	.5	.8	10.3	12.9	5.1	2.2	.8	35.3
33	.7	.5	.3	.4	.4	.4	.5	4.1	11.9	3.9	1.0	.4	24.5
34	.5	.5	.4	.3	.3	.3	1.1	3.6	1.9	.5	1.1	.4	10.9
1935	.6	.5	.4	.4	.4	.5	.7	3.5	14.8	3.0	1.0	.5	26.3
36	.6	.5	.5	.4	.4	.4	.7	6.6	6.2	3.3	2.7	2.2	24.5
37	.8	.9	.5	.4	.4	.4	.9	11.4	10.3	4.6	2.2	1.4	34.2
38	.8	.6	.3	.4	.4	.5	1.4	8.5	15.3	4.7	2.0	2.0	36.9
39	1.8	1.3	.8	.5	.5	.6	1.8	11.8	5.0	1.8	.9	1.1	27.9
1940	1.0	.4	.2	.2	.3	.3	1.1	9.6	3.5	1.0	.4	1.0	19.0
41	1.4	.9	.6	.4	.3	.4	.7	14.5	13.8	5.3	2.6	1.5	39.4
42	1.6	1.0	.7	.5	.3	.4	.7	6.8	12.9	5.0	1.6	.8	32.3
43	.7	.7	.6	.5	.5	.9	4.3	7.3	8.2	4.1	2.3	.8	30.9
44	.9	.6	.4	.4	.5	.6	1.0	8.3	14.8	8.8	2.0	.7	38.8
1945	.9	.7	.4	.4	.4	.6	.7	7.0	11.1	3.4	3.8	1.1	35.9
46	1.0	.7	.7	.6	.5	.8	5.1	7.1	7.1	7.0	1.0	.5	28.5
47	.7	.7	.6	.5	.5	.6	.9	9.3	10.7	7.0	2.6	1.1	35.2
48	.9	.6	.5	.5	.4	.5	.8	9.5	8.4	2.3	1.1	.5	26.0
49	.5	.5	.4	.4	.3	.4	1.0	8.3	15.6	7.1	2.2	.7	37.4
1950	1.1	.8	.5	.3	.3	.3	.8	5.5	13.2	5.1	1.6	.8	30.3
51	.7	.6	.5	.4	.4	.5	.8	7.0	10.1	5.7	2.6	1.1	30.4
52	1.4	1.0	1.0	.8	.6	.6	1.5	11.8	18.8	7.6	3.0	1.6	49.1
53	.9	.6	.5	.5	.4	.5	.9	2.0	15.3	5.0	2.2	.6	29.4
54	.5	.5	.5	.3	.3	.4	1.4	6.0	3.5	2.8	1.1	.9	18.2
1955	.8	.6	.3	.4	.3	.4	.6	5.9	6.9	2.6	1.5	.7	21.0
56	.6	.4	.4	.4	.4	.5	1.0	9.6	10.7	3.2	1.1	.4	28.7
57	.3	.3	.3	.3	.3	.3	.3	3.5	19.8	9.4	2.4	.9	38.1
58	.8	.6	.6	.6	.6	.8	1.1	9.6	10.3	3.1	1.4	1.1	30.6
59	.5	.4	.4	.3	.3	.3	.5	5.7	14.3	4.0	1.7	1.1	29.5
1960	1.2	.7	.2	.2	.2	.6	1.5	6.3	9.1	2.5	.7	.7	23.9
Total	27.0	20.5	15.4	13.2	12.1	15.4	38.0	230.9	332.1	136.6	56.4	28.9	926.8
Range	0.9	0.7	0.5	0.4	0.4	0.5	1.2	7.5	10.7	4.4	1.8	0.9	29.9

Notes 95% of East Fork of Smiths Fork nr Robertson (Table 12 Lyman Project DPR)

not to be less than estimated runoff at China Meadows Damsite (Table 15 DPR).

UNITED STATES DEPARTMENT OF AGRICULTURE
FOREST SERVICE
Wasatch NF

REPLY TO: 1310 Planning

November 22, 1974

SUBJECT: Preliminary Cost Estimates for
Stateline Dam Recreation Complex



TO: Al Walker, Chief
Range Watershed, Wildlife Branch

Enclosed is a copy of the construction cost estimates reflecting costs of construction in Fiscal Year 1975. It is anticipated that the enclosed figures must be increased 25 percent for each year's delay in construction e.g.

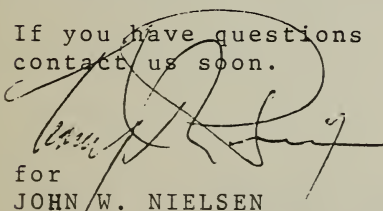
(1) F&'75 Project Cost x 1.25 = FY'76 Project Cost
(852,960 x 1.25 = \$1,066,200)

(2) FY'76 Total Project Cost x 1.25 = FY'77 Project Cost

The above 1.25 inflation factor represents a 20 percent inflation per year in construction costs.

Enclosed preliminary cost estimates of this type must either be updated each year from now to construction or have inflation factors applied to compensate for increases in construction and the economy.

If you have questions concerning the submittal, please contact us soon.


for
JOHN W. NIELSEN
Forest Engineer

STATE LINE DAM
RECREATION COMPLEX

PRELIMINARY COST ESTIMATES

WASATCH NATIONAL FOREST
ENGINEERING

November 21, 1974

SUMMARY OF PROJECT COSTS

Treatment Plant

Project Construction	359,240
Design	29,000
Contract Administration	44,000
Overhead	40,000
Subtotal (1)	472,240

Campground Alternate 3

Project Construction	292,720
Design	26,000
Contract Administration	30,000
Overhead	32,000
Subtotal (2)	380,720

(1) + (2) Total Project Cost	852,960
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RECOMMENDED FINANCIAL PARTICIPATION

TREATMENT PLANT

Forest Service	472,240 x .75 =	\$363,624
Bureau of Reclamation	472,240 x .25 =	108,616
	Subtotal	\$472,240

CAMPGROUND DEVELOPMENT

Forest Service	-0-	
Bureau of Reclamation	\$380,720	
	Subtotal	\$380,720
Total Forest Service		\$363,624
Total Bureau of Reclamation		489,336

TOTAL PROJECT COST \$852,960

PARTICIPATION FACTORS

Forest Service (existing)

$\frac{135 \text{ lbs. B.O.D. per day}}{.2 \text{ lbs. B.O.D. per person}} = 675 \text{ people per day}$

Bureau of Reclamation (new 45-unit campground)

45 unit x 5 people per unit = 225

Total PAOT = 675+225 = 900 PAOT

Forest Service $\frac{675}{900}$ (100) = 75 percent of cost

Bureau of Reclamation $\frac{225}{900}$ (100) = 25 percent of cost

RECOMMENDED FINANCIAL PARTICIPATION (PARTICIPATION) FACTORS:

Forest Service (existing)

$$\frac{135 \text{ lbs. B.O.D. per day}}{0.2 \text{ lbs. B.O.D. per day per person}} = 675 \text{ people per day}$$

B.O.R. Campground (Stateline)

$$45 \text{ units} \times 5 = 225 \text{ PAOT}$$

B.O.R. Campground (Meeks Cabin)

$$25 \text{ units} \times 5 = 125 \text{ PAOT}$$

B.O.R. (Pomavek Lake)

$$50 \text{ PAOT}$$

B.O.R. Total PAOT 400 PAOT

F.S. Total PAOT 675 PAOT

TOTAL PAOT 1,075 PAOT

$$\frac{400}{1075} (100) = \text{B.O.R.} = 37\%$$

$$\frac{675}{1075} (100) = \text{F.S.} = 63\%$$

FINANCIAL PARTICIPATION

FISCAL YEAR 1975

TREATMENT PLANT

Forest Service	472,240 x 0.63 =	297,512
Bureau of Reclamation	477,240 x 0.37 =	174,728
	Subtotal	472,240

45-unit Campground (Stateline)

Forest Service	=	-0-
Bureau of Reclamation	=	380.720
	Subtotal	380,720

Facilities to be constructed at Meeks
Cabin Dam Not included in this proposal.

Total Forest Service	=	297,512
Total Bureau of Reclamation	=	555,448

TOTAL PROJECT COST	852,960
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STATELINE TREATMENT FACILITY

NARRATIVE

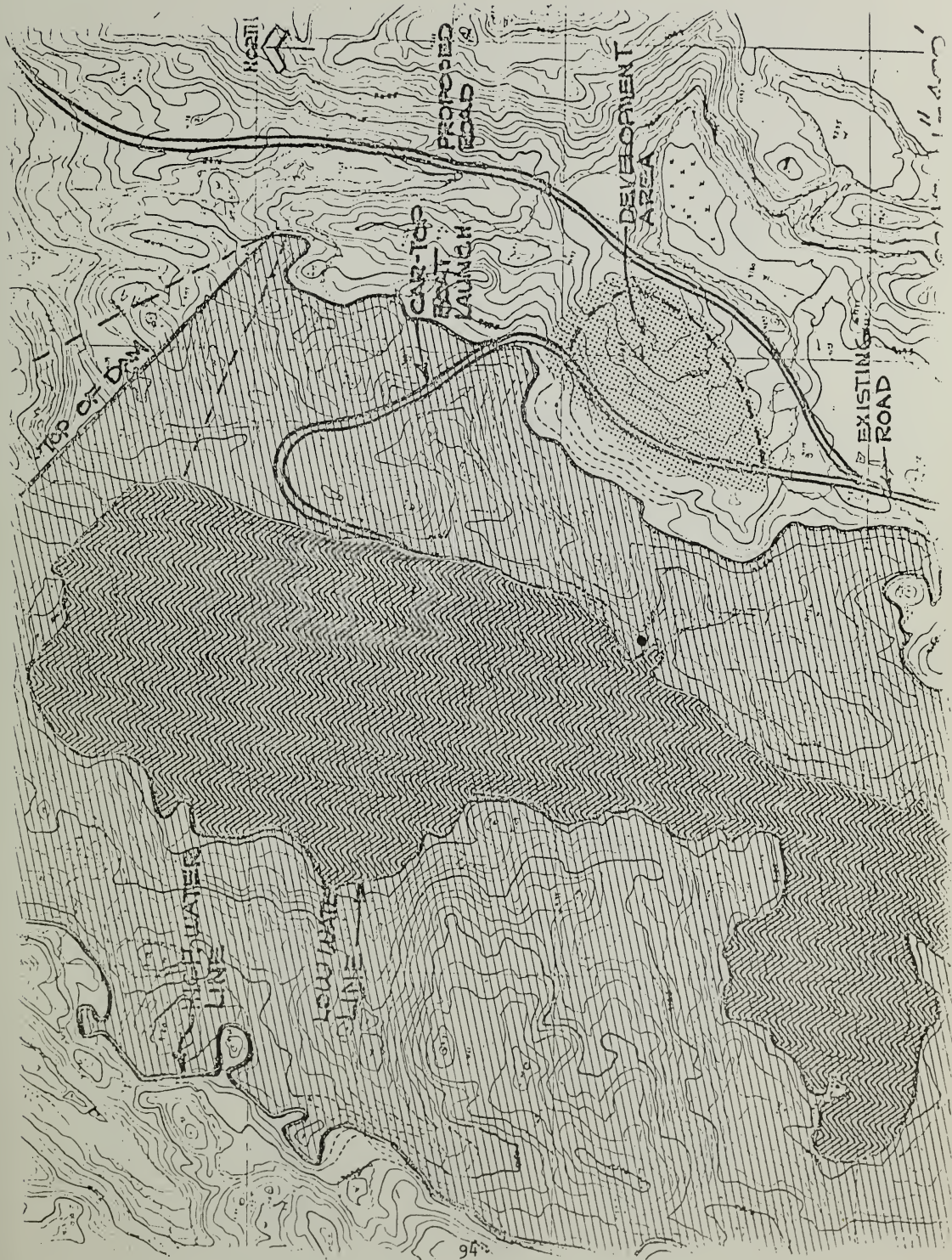
The State of Wyoming does not require total containment for treatment plants. Taking this into account the following treatment plant system is proposed.

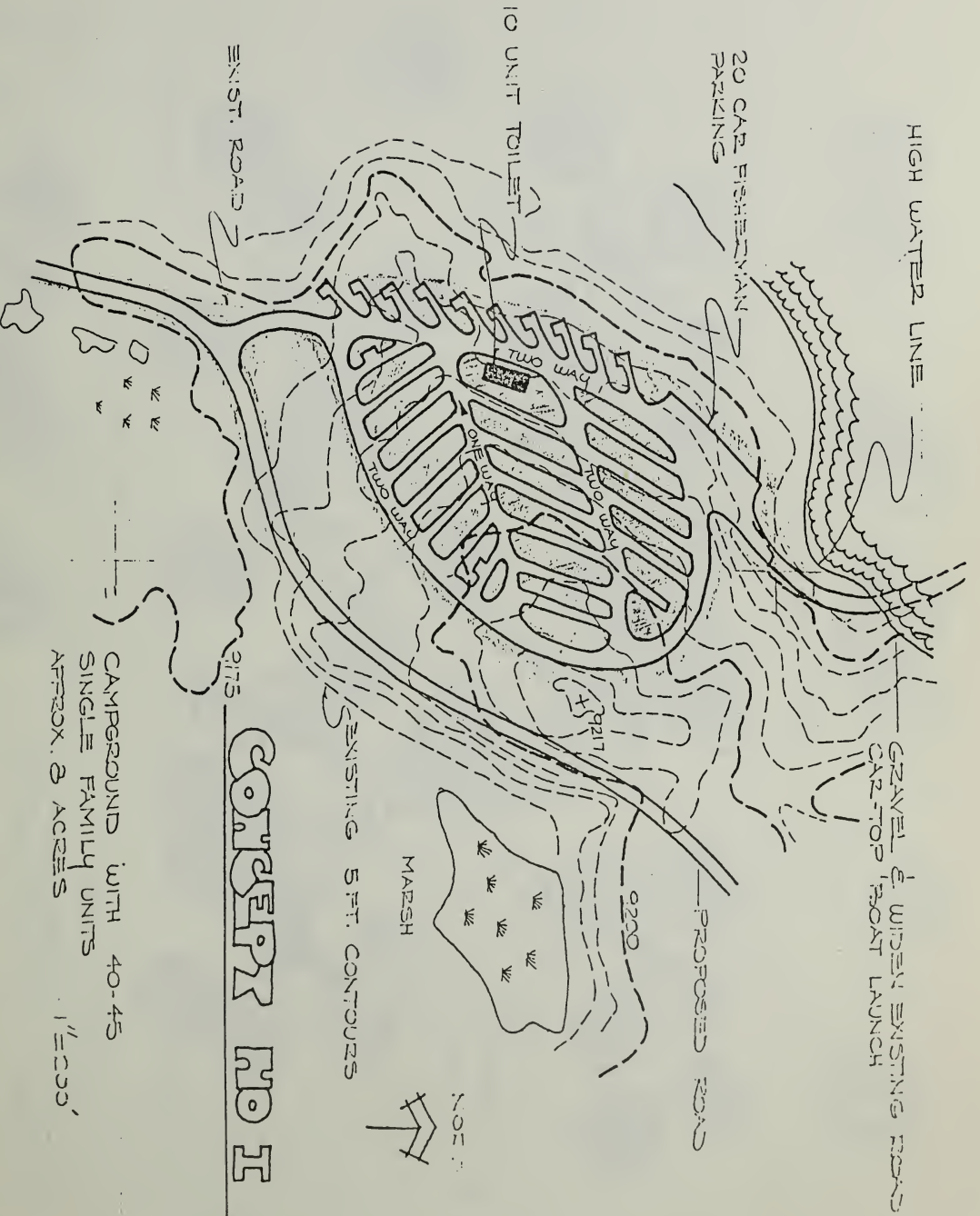
- a. Provide minimum size aerated cell (0.3 acre-surface) Pond "A".
- b. Provide minimum size polishing pond (0.5 acre-surface) Pond "B."
- c. Provide disposal bed or evaporation pond Pond "C" approximately 0.1 acres.
- d. Water supply shall be collected surface water (non-potable) from Cottonwood Creek. Provide pressure tank for receiving station and blow down requirements. "
- e. Provide housing for air system components.
- f. Provide fence around complex
- g. Provide single phase power with three-phase converter and adequate one-lane service road.

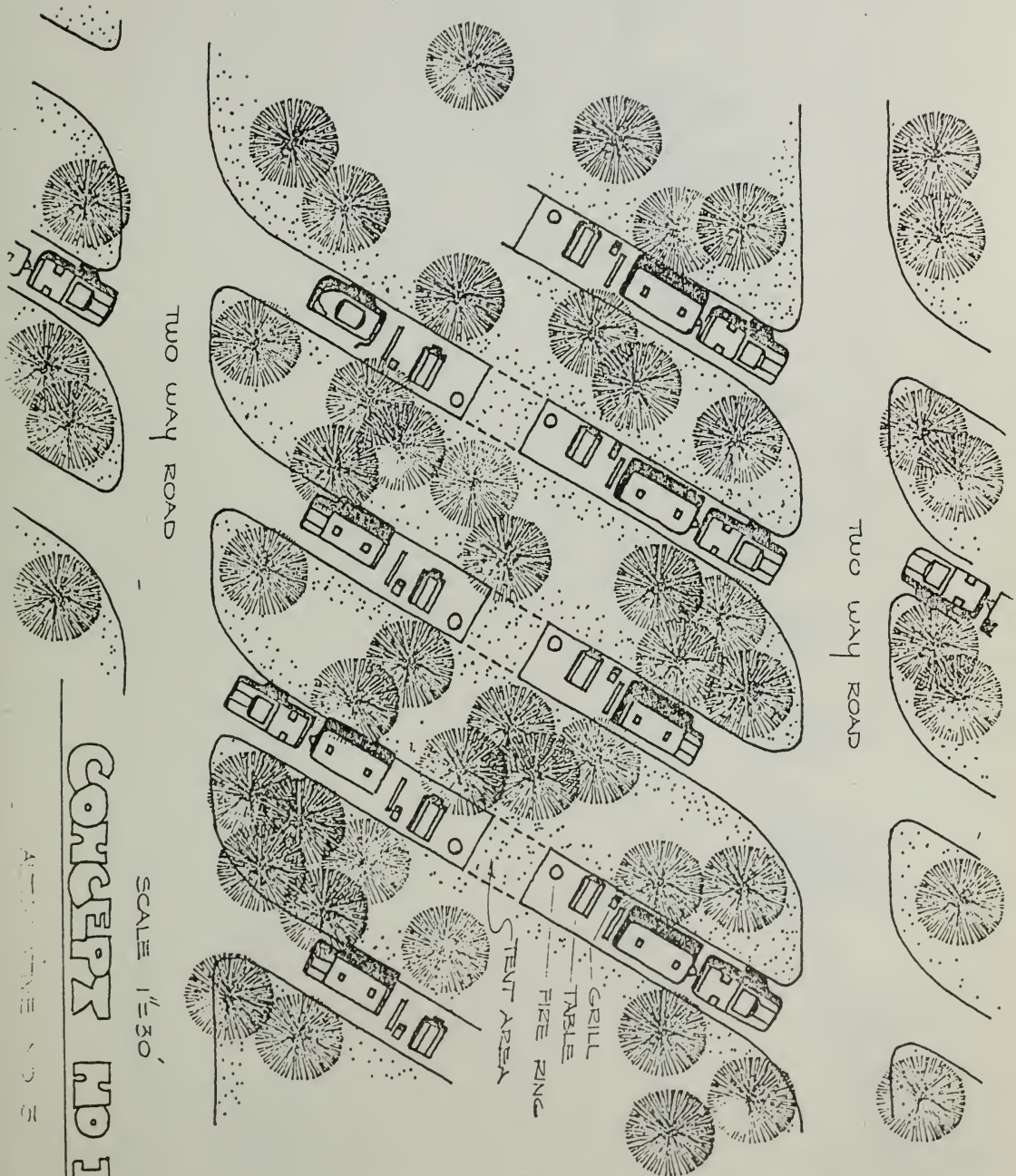
System shall be designed for addition of multiple aerated cells for future expansion and needs. Present system would be minimum size to accept sewage from new proposed camp-ground development near reservoir.

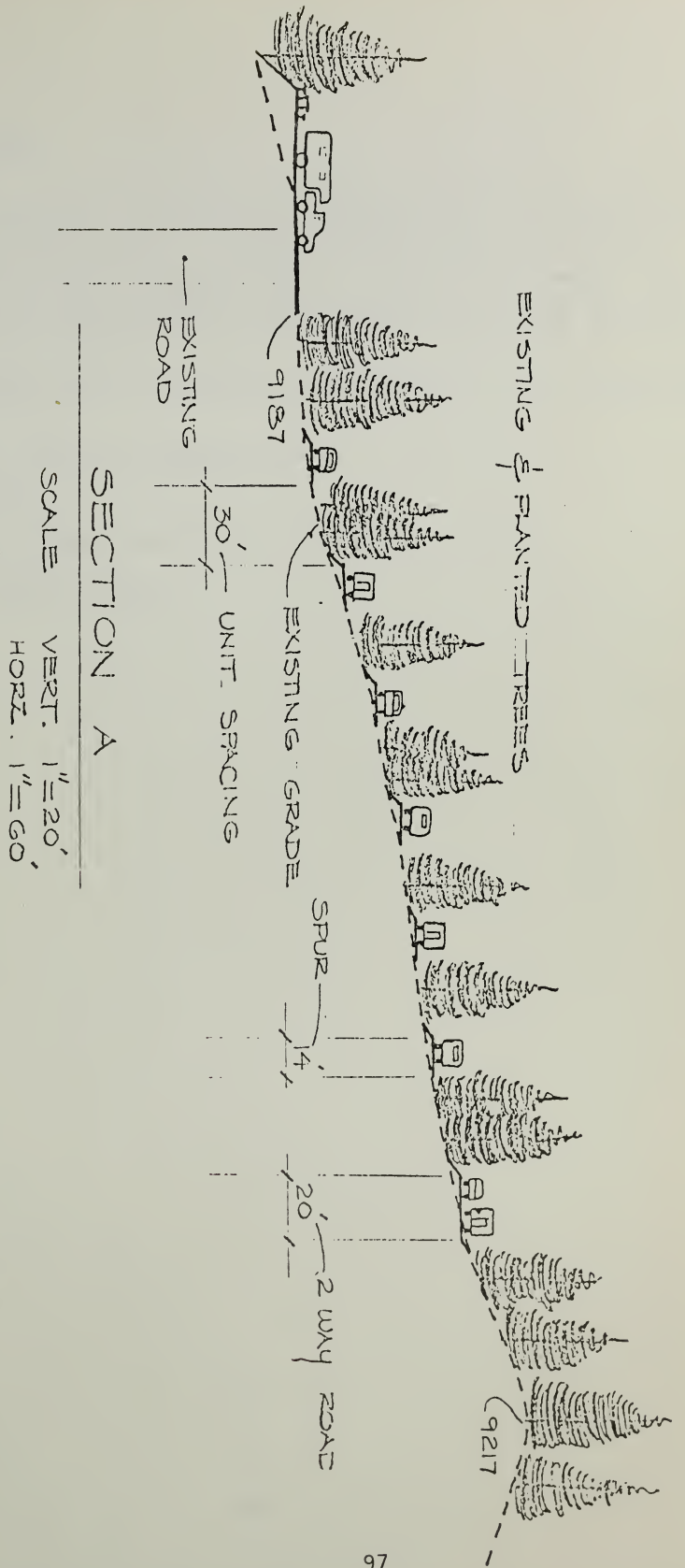
Breakdown of estimated costs for minimum size treatment facility.

<u>Item No.</u>	<u>Item Description</u>	<u>Unit</u>	<u>Quantity</u>	<u>Unit Cost</u>	<u>Extended Cost</u>
1	Ponds A. (exca.)	Cu. Yd.	2,000	1.60	3,200
	B (exca.)	Cu. Yd.	4,000	1.60	8,640
	C (exca.)	Cu. Yd.	1,500	1.20	1,800
2	Building	Job	1	25M	25,000
3	Bedding Material	Cu. Yd.	800	11.00	8,800
4	Fence	Job	1	22M	22,000
5	Liners	Job	1	12M	12,000
6	Air System & Test	Job	1	40M	40,000
7	Special Structures	Job	1	7M	7,000
8	Piping & Manholes	Job	1	10M	10,000
9	Signs	Job	1	2M	2,000
10	Misc. piping & boxes	Job	1	6M	6,000
11	Road	Mile	1.5	45M	67,500
12	Power (primary)	mile	2.7	9M	24,300
13	Power (conn.)	job	1	4M	4,000
14	Electrical & Converter	Job	1	20M	20,000
15	Receiving Station	Job	1	18M	18,000
16	Water Supply	Job	1	47M	47,000
	Subtotal				327,240
	± 10%				32,000
	Subtotal				359,240
	Design & Survey				29,000
	Contract Administration				44,000
	F.S. Overhead				40,000









SECTION A

SCALE VERT. 1"=20'
HORIZ. 1"=60'

CONCEPT NO 1

CAMPGROUND FACILITY

After the Forest discussion approximately October 21, 1974, it was decided to propose a 40-45 unit campground (low impact) facility near the reservoir. Further investigation on the water supply potential indicates that a suitable system can be developed. Detailed study of the proposed spring source will be required to varify the validity of the water quality.

The proposal submittal is based on inclusion of the following items:

- 45-unit high density campground
- 20-car parking
- Car top boat ramp
- Recirculating flush toilet with holding vaults
- Trailer Dump station
- Campground water system

Concept 1 (Revised)
 Alternate No. 3

<u>Item</u>	<u>Item Description</u>	<u>Unit</u>	<u>Quantity</u>	<u>Unit Cost</u>	<u>Extended Cost</u>
1	Two-way road without asphalt	Lin. Ft.	2,800	8.00	22,400
2	One-way road without asphalt	Lin. Ft.	1,200	6.50	7,800
3	Toilet Building 10-unit recirculating	Ea.	1	58,000	58,000
4	Parking Area	Sq. Yd.	667	3.50	2,335
5	Family Unit	Ea.	45	800	36,000
6	Trailer Dump Station	Ea.	1	12,000	12,000
7	Wash Basin with vault	Ea.	6	3,500	21,000
8	20 foot boat access road	Mi.	.32	52,000	16,640
9	Hydrants	Ea.	13	65.00	845
10	Water Supply				
	Spring Devel.	Job	1	6M	6,000
	Access Road	Job	1	5M	4,000
	Storage Tank	Job	1	8M	8,000
	Supply Line	Lin. Ft.	3467	6.00	20,800
	Valve and Box	Ea.	4	200	800
	Chlorinator	Ea.	1	500	500
	Distribution Line	Lin. Ft.	800	5.00	4,000
11	Miscellaneous Appurtances	Job	1	3M	3,000
12	Campground Road Asphalt parking and road	Ton	2,000	21.00	42,000
Subtotal					266,120
+ 10% Cont.					26,600
Subtotal					292,720
Design					29,000
COR					32,000
SO. Overhead					33,000
Total Project					386,720

2510

February 27, 1975

Mr. David L. Crandall
Bureau of Reclamation
P. O. Box 11568
Salt Lake City, Utah 84111

Dear Dave:

We have completed the analysis of recreation costs and benefits for the proposed Stateline site. Included in our report are facilities to accommodate project-induced recreation use at Pomavek Lakes, should that project be constructed for fisheries mitigation.

Proportionate financing of an aerated sewage lagoon system has been allowed for in our calculations. The participation percentages used are 63 percent Forest Service and 37 percent Bureau as discussed at our December 16, 1974, meeting.

Enclosed for your information is a copy of our Engineer's report on preliminary cost estimates for the proposed Stateline recreation complex. Included in this report is a layout map for the campground, cost estimates for the campground and sewage treatment facility, and recommended proportionate financial participation for the sewage treatment plant. Our Engineer has informed us that at the current rate of inflation, cost estimates will have to be increased 25 percent for each year before construction.

If you have any questions regarding any of the enclosed data, please feel free to contact us.

C. P. ST. JOHN

CHANDLER P. ST. JOHN
Forest Supervisor

Enclosure

cc: Regional Forester; R & L; S & WM; WL; D-5

AWWalker:akf

STATELINE RECREATION DEVELOPMENT
COST ESTIMATE

<u>ITEM</u>	<u>UNIT</u>	<u>QUANTITY</u>	<u>UNIT COST</u>	<u>TOTAL COST</u>
<u>POMAVEK</u>				
Road-Grade & Reshape	Miles	3	700	2,100
Toilet	Each	1	18,000	18,000
Parking Lot Grading (20 Cars)	Sq. Ft.	9,600	.64	6,144
Campground	F.U.'s	12	800	9,600
				<u>35,844</u>

SEWAGE TREATMENT FACILITY

Sewage Treatment (aerated lagoons with sprinklers, pumphouse; access road; powerline; water supply)	Each	1	327,240	327,240
Trailer Pump Station			12,000	<u>12,000</u>
				<u>339,240</u>

Recommended Financial Participation by F.S. and B.R.

B.R. Total PAOT (Meeks Cabin, POMAVEK, Stateline) 400 PAOT

F.S. Total PAOT (Existing) 675 PAOT

B.R. = $37\% \times 339.240 = 125,519$

F.S. = $63\% \times 339.240 = 213,721$

Stateline & Pomavek = $26\% \times 339.240 = 88,202$ 88,202

STATELINE CAMPGROUND

Campground	F.U.'s	45	800	36,000
Toilet (10 unit recirculating)	Each	1	58,000	58,000
Two-way road without asphalt	Lin. Ft.	2,800	8.00	22,400
One-way road without asphalt	Lin. Ft.	1,200	6.50	7,800
Parking Area	Sq. Ft.	667	3.50	2,335
Access Road and Parking (asphalt)	Ton	2,000	21.00	42,000
Wash Basin with Vault	Each	6	3,500	21,000
20 Foot Boat access road	Each	.32	52,000	16,640
Miscellaneous Appurtenances	Job	1	3,000	3,000
Spring Development	Job	1	18,000	18,000
Water Line	Lin. Ft.	3,467	6.00	20,800
Water Distribution System	Each	1	6,145	6,145
				<u>254,120</u>

OVERHEAD

<u>TOTAL CONSTRUCTION COSTS</u>	378,166
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F.S. Contingency 10% of 124,046 (Construction cost of Pomavek and B.R. Proportionate Share of Sewage Treat- ment Facility)	12,405 <u>390,571</u>
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B.R. Contingency 10% of Construction Costs	25,412 <u>415,983</u>
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DESIGN AND CONTRACT PREPARATION

F.S. Design Costs = 8% of 415,983 Pomavek, Stateline C.G., Sewage Treatment Facility	33,279
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F.S. Contract Preparation = 2% of 124,046	2,481 <u>451,334</u>
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C.O.R.

F.S. C.O.R. 2 Const. Seasons for Sewage Treatment Facility (25% of 44,000 and Pomavek 3,400)	11,000 3,400
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B.R. C.O.R. = 8% of 279,532 (Const. Cost & Cont.)	22,362 <u>494,096</u>
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OVERHEAD

F.S. Overhead 20% of 186,611 (Contingency, 12,405, D & CP, 35,760; C.O.R., 14,400; Pomavek, 35,844; Sewage Treatment Plant, 88,202)	37,322
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B.R. Overhead = 15% of 279,532 (Const. Cost & Cont.)	41,930 <u>573,348</u>
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INTEREST DURING CONSTRUCTION = $2.875 \times 573,348$	16,484 <u>589,832</u>
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RECREATION ANALYSIS

TOTAL COST	589,832
Basic Recreation Facilities Amortized at 2 7/8 Annuity for 100 Years	.0305
ANNUAL COST	17,990
Operating Costs 10¢ x 29,000 Visitor Days;	
Sewage Treatment Plant 25% of 4,000	3,900
Maintenance = 3% x 318,960 (Stateline and Pomavek, Const. & Cont.)	9,569
Treatment Plant 25% of 7,000	<u>1,750</u>
SUBTOTAL	15,219
Replacement - Recreation and Sewage Treatment Facilities 25 Years = .0279 x 415,983	11,605
Loss in Forest Resource Values	
Grazing	50
Timber	<u>400</u>
TOTAL	45,264
Recreation Benefits 29,000 V.D. (4,320 Pomavek, 24,680 Stateline) @ 1.75	50,750
NET ANNUAL BENEFIT	5,486
Benefits x Present Value for 100 Years = 32.739 Rounded to 32.8	
NET BENEFITS FOR LIFE OF PROJECT	179,941
COST BENEFIT RATIO	1.121

XIII. Estimated Costs of Replacing Facilities and Services, Mitigating Measures, and Administrative and Protective Services.

TABLE I

Estimated Costs of Replacing Existing Facilities and Services,
Mitigating Measures, and Administrative and Protective Services.

A. Facilities and Mitigating required:

	<u>UNITS</u>	<u>COST</u>
1. Roads	.6 mile	\$30,000
2. Land acquisition (for mitigating wildlife habitat losses)	420 acres	294,000
3. Other mitigating measures (Pomavek Lakes Proposal) (See Appendix E)		289,894
4. Other roads (Betterment and gravel)		265,800

B. Administrative and protective services:

1. Extra fire protection (1-GS-4 for 30 pp, for mileage and mobile radio)		11,090
2. Increased maintenance		
a. Roads (14½ mile maintenance on Gilbert Creek and China Meadows Road)		52,200
	<u>TOTAL</u>	\$942,984

TABLE 2

Estimated Costs of Providing Facilities and Services to Meet
Project Related Use.

A. New facilities to provide normal expected basic protection
and services for health, safety, and property, as applicable.

1. Public use, access, and management facilities
(See recreation cost estimates in Appendix G)

	<u>UNITS</u>	<u>COST</u>
a. Total recreation costs	1	
b. Fences	1 mile	2,505
c. Cattleguard	1	2,000

2. Soil stabilization

a. grass seeding	30 acres	450
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3. Stabilization of Marsh Lake
(Appendix D)

101,417

B. Administrative Services

1. Liaison officer (1-GS-11 for 36 months, and travel)	36 man-months	53,412
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TOTAL \$159,784

TABLE 3

Economic Effects of Projects on National Forest Resources &
Services Including Annual Benefits and Losses.

A. Increased management costs:		<u>Annual Loss</u>	<u>Annual Gain</u>
1. Fire protection:		\$11,090	
B. Change in Resource Values:			
1. Forage production capacity	50		
2. Timber	400		
3. Recreation potential (Analysis attached)			\$50,750
4. Water			
a. Direct benefits			258,800*
b. Indirect benefits			135,700*
c. Public benefits			11,200*
	<u>TOTAL</u>	\$11,540	\$456,450

* Quoted from Definite Plan Report for Lyman Project, November, 1962,
Bureau of Reclamation.

